[1] THE KINSHIP SYSTEM OF THE NAYARS OF MALABAR

I The Malabar Coast

(1) Physical Features

131 The Malabar Coast lies in the extreme south-west of India, along the shores of the Arabian Sea. The coastline is 360 miles long, the area 14,908 square miles. It is divided off from the rest of South India by the Western Ghats, a mountain wall broken only in the centre of the [167] area by the Palghat Gap. Though periodic immigrations have taken place from the eastern plateau of peninsular India into the coastal region, the mountains prevented close contacts between the people who became established there [177] and their neighbors to the east. On the other hand, its position laid the area open to contacts by sea with many peoples, including Jews and Arabs (1,000 B.C.), Egyptians and Phoenicians (5th century B.C.), Romans (1st century A.D.), Chinese (6th century A.D.), and after 1498 the Portuguese followed by the English, Dutch and French.

133 The coast falls roughly into three natural divisions: the coastal strip, the midlands, and the highlands rising into the Ghats.

[241] The coastal strip is flat and sandy. Its chief product is coconuts, with some rice and bananas. [2] In the southern half of the area it is broken by salt-water lagoons which for over 100 miles form a continuous navigable chain, parallel to 133 the sea. Almost all the chief towns (from north 361 to south, Cannanore, Tellicherry, Mahé,

133 Calicut, Cochin, Alleppey, Quilon and Trivan-
361 drum), are situated on the coast, divided by chains of little fishing villages. In the northern
133 half a railway runs along its edge from Manga-
361 lore in South Canara, southeast to Shoranur,
496 where it divides and turns off northeast to Madras and south to Ernakulam, the capital of Cochin State. In the extreme south another railway comes in from Tinnevelly District in the east, and follows the coast from Quilon to Trivandrum. (See Map 1.)

133 The midlands comprise low hills and fertile
241 valleys. Broad strips of alluvial rice-lands lie in the valleys, thinning out as the land rises into the foothills of the Ghats. On the hill slopes are gardens of coconut palms, tapioca, plantains, pepper, ginger, rubber, cashew-nut trees, and many fruit trees such as jack and mango. Cashews (introduced by the Portuguese) and pepper have become for the past 100 years particularly important cash crops on the hill-slopes of North Malabar District, while bamboo is more prevalent in South Malabar District and Cochin. The coconut is ubiquitous and very important in the total economy. There are a few small bazaar
[361] towns, [3] but most of the people live in villages, on garden land surrounding or surrounded by wet paddy-flats.

133 The highlands rising into the Ghats are covered
[136] mainly by thick virgin forests harbouring wild elephant and small tigers. The foothills are
[162] sparsely populated by people of the same cultural groups as are found in the plains, while higher in the mountains live primitive tribes.

241 Large plantations of tea, coffee, rubber and
313 cinnamon have been developed, chiefly by British, in the highlands in the past hundred years, and in the forests teak provides a basic industry.

132 The rainfall is very heavy, especially in the north where the mountains encroach nearer to the sea. Through most of the area it varies between 75" and 170"; in the extreme south it drops to 32". Most of the rain comes with the southwest monsoon between May and September; lighter rains occur with the northeast monsoon in late November and December. Humidity is
[243] always very high. In most areas two wet paddy crops are taken in a year, in February and September. The temperature varies from 70° to 90°, and is hottest in April just before the monsoon breaks.

[4] (2) Political Divisions

63 From the establishment of British supremacy in 1792, until July 1949, the Malabar Coast was divided into three political areas. In the north is the Malabar District of Madras State, in area 5,790 square miles. It is governed in internal affairs by the legislative assembly of Madras, and is under a Collector (of land revenue) who lives in Calicut, the capital of the district. The port of Cochin is also administered as part of Malabar District. In the centre was Cochin State, in area 1,493 square miles. It was governed internally by the Maharaja of Cochin, assisted by the Cochin legislative assembly, whose headquarters was in Ernakulam, the capital. In the south was Travancore State with an area of 7,625 square miles, under the Maharaja

2:Gough E-4, 5 (1947-1949)1961 A Wll Kerala A Wll
Central Kerala Nayar

Nayar: Central Kerala

The Nayars, unlike the groups so far described, form only a part-society—a named category of castes within the social system of south-west India. An account of their kinship system therefore requires a sketch of the political and economic system in which they were embedded. It seems to have been the Nayars' role as a specialized occupational group within a complex society which accounted for the most unusual features of their kinship institutions.

The Nayars differ also from the other groups considered with regard to their relatively high level of technological development. At least from the first century A.D., Kerala's social structure was based upon plough agriculture with irrigation, specialized crafts, and overseas trade (K. M. Panikkar, 1945: 36). Productivity was sufficiently high so that more than one-quarter of the population could be exempted from manual labor and set apart as specialist, literate groups engaged in religion, government, warfare, and wholesale trade. The Nayars, as the ruling and military castes, formed the core of this aristocracy and probably comprised between one-quarter and one-fifth of the total population.[1]

Partly as a result of direct legal changes brought about since the British conquest of 1792, and, more deeply, as a result of the change to an industrial fuel technology, the Nayar system of matrilineal groups has been gradually disintegrating over the past hundred years. Some of the traditional functions of these matrilineal units are being taken over by the elementary family and by the wider, personal, bilateral kindred of each individual. Other former functions of matrilineal groups have passed to such modern bureaucratic institutions as government, army, law court, and school. Because this book is a comparative study of matrilineal systems, I shall concentrate on Nayar lineages and kinship in the "traditional" period before the British

[1] Buchanan estimated the population density of Central Kerala at 100 per square mile in 1800 (1807, II: 501). The density for Cochin State was 814 per square mile in 1931 (Census of India, Cochin State, 1931).

2:Gough E-4, 5 (1947-1949)1961 A W11 Kerala A W11
Central Kerala Nayar

177 nese (from at least the sixth century) and after 1498 the Portuguese, followed by the English, Dutch, and French (Logan, 1951, I: 251–254, 258, 294–399).

133 The coast falls roughly into three natural divisions: the coastal strip, the midlands, and the highlands rising into the Ghats (cf. Buchanan, [245] 1807: 565–566). The coastal strip is flat and sandy. Its chief product is coconuts, with some rice and bananas. In the southern half it is [243] broken by salt-water lagoons which for over a hundred miles form a continuous navigable chain parallel to the sea. Most of the chief 361 towns are situated on the coast, divided by chains of little fishing vil- [487] lages. Many of the coast towns are ancient, and most of them lie at the mouths of navigable rivers which flow westward from the Ghats. [439] From time immemorial raw materials, chiefly pepper, were brought by boat from the inland hillsides for shipment from these ports.

133 The midlands comprise low hills and fertile valleys. Broad strips of alluvial rice lands lie in the valleys, thinning out as the land rises 245 into the foothills of the Ghats. On the hill slopes are gardens of co- conut palms, bananas, pepper, ginger, and many fruit trees such as [439] jack and mango. It was probably wild pepper which was exported in Roman times, but pepper and other spices have been deliberately [177] cultivated at least since 1290 (Ricci, 1931: 328). Cashew nuts, introduced by the Portuguese, formed an additional export crop. Small 361 merchant settlements, market-centers, and the military fortifications of 443 petty chiefs existed at strategic points on river banks. Some of these centers grew into bazaar towns in the nineteenth century. But the mass of the population traditionally lived, as today, in scattered village communities on garden land surrounding or surrounded by fields 243 of wet rice, the main subsistence crop. Wet-rice cultivation depended 231 on plough agriculture with teams of oxen or water buffalo. Goats and chickens were the other significant domestic animals.

361 The highlands rising into the Ghats were covered mainly by de- [133] ciduous forests. The foothills, interspersed with occasional rice flats, were sparsely populated by people of the same cultural groups as those in the plains. They eked out their wet-rice cultivation with gar- [241] den crops of fruits, spices, and vegetables, with shifting hoe cultiva- [224] tion of dry grains on hillsides, and with forest hunting of elephant, deer, and pig. Higher in the mountains lived primitive tribes of hunters and shifting cultivators, having only occasional contacts with the kingdoms of the plains.

132 Throughout most of the area Kerala's rainfall varies between 75 and 170 inches, being heaviest in the north where the mountains are

2:Gough E-4, 5 (1947-1949)1961 A W11 Kerala A W11
Central Kerala Nayar

nearer to the sea (Innes, 1908: 270). The temperature varies from 70° to 90° and humidity is always high. Unlike most of the great kingdoms of India, Kerala had no single great river and no extensive, centrally organized irrigation system. Instead, her cultivated crops and lush vegetation depended on the heavy rainfall and numerous small rivers and streams by means of which small-scale irrigation was easily possible to groups of families.

Further, the heavy rainfall, seasonal floods, and hilly terrain made communications difficult until modern times. Before the partial conquest of Kerala by Mysoreans from the northeast in 1766, there were no roads, wheeled vehicles, or pack animals. The kings maintained small cavalry forces only in the coast towns, traveled in palanquins, and employed runners to carry messages to their vassal chiefs. Goods were dragged downstream by elephants, transported in boats, or carried on the backs of men. Armies moved slowly; local nobles sometimes rebelled against their rulers but warfare was abandoned in the heavy southwest monsoon season from May to September. The difficulty of communications and the lack of a centrally organized irrigation system may have been connected with the fact that Kerala had no regular land tax until the 1730's (*ibid.*: 308). Instead, the revenues of her rulers came from tribute in kind supplied by subordinate nobles, and from taxes levied upon overseas trade (Logan, 1951, II: ccxviii; Innes, 1908: 307–308).

In spite of the overseas trade, most of Kerala's villages were traditionally self-sufficient for the basic necessities of life. Quantities of manufactured goods were brought to Kerala's ports from other parts of India for shipment to the Middle East, but indigenous crafts such as weaving, metalwork, pottery, and basketry remained simple and served local needs. Kerala thus had no large urban castes of craftsmen and no indigenous merchant castes, but only immigrant communities of Syrian Christian, Jewish, Muslim, and, later, European merchants and Hindu merchants from other kingdoms of India, all concentrated in the coastal towns. The limited nature of trade and crafts and the comparative self-sufficiency of village life also help to account for the relatively decentralized political structure.

History

Little is known of Kerala until the first century A.D. It then formed part of the kingdom of Chera, whose capital was probably east of the Ghats at Karur on the Kaveri River in the modern Trichinopoly district. Chera, like its companion South Indian kingdoms, Chola and

2:Gough E-4, 5 (1947-1949)1961 AWll Kerala AWll
Central Kerala Nayar

tertaining friends, or sleeping when they were not visiting their wives. A cowshed a few yards from the residential buildings completed the arrangements in a normal retainer homestead. In village headmen's and chiefly households whose women often had Brahman husbands a separate building with its own kitchen was set aside to entertain the men when they visited their wives.

The buildings and outer courtyard were surrounded by a shady garden of coconut, jack, cashew, and mango trees. Chiefs and village headmen had a private bathing pool with stone steps round it in their own gardens. Retainers more often bathed in the large public bathing pools attached to the temples and reserved for "clean" castes of the village. Men and women bathed and swam daily on opposite sides of the pool.

In the southwest corner of the garden an open space was set aside as the property group's cremation ground, entered only at funerals. In another corner was a dense shrubbery devoted to the snake gods of the group. Offerings were made there to small stone images of cobras, and if real cobras appeared they were regarded as manifestations of these deities.

A high bamboo fence surrounded the whole establishment. It was entered through a wooden gatehouse within which armed men might sit on guard in time of war.

Economic Activities The property group obtained almost all of its subsistence from garden and paddy lands held on tenure from the village landlord and cultivated by Tiyyar sub-tenants or by Pulaya serfs. The property group surrendered part of its produce in kind as dues to the landlord. It retained part for maintenance, stored part for repayment to its serfs as daily subsistence, and gave portions twice annually to the village servant households. Tiyyar tenants retained enough for their own needs, but gave the bulk of their produce to their Nayar masters. Increasingly during the period of European trade the property group also sold spices and coconuts to Muslim middlemen in exchange for cash or cloth. The cash was used to buy brass and silver vessels, gold ornaments and jewelry, and other luxury goods from the towns. The property group gave some cloth to its serfs and tenants at festivals once a year.

The kāranavan managed all these transactions and controlled the group's estate. He might allocate specific tasks of management to juniors, but no payment was made on behalf of the group, no crops were sold, and no goods were consumed without his consent. Junior men serving in the king's wars received small daily cash sums on an

2:Gough E-4, 5 (1947-1949)1961 A W11 Kerala A W11
Central Kerala Nayar

613 in Malayalam and some became famous poets during the sixteenth
868 and later centuries. A Nayar received his arms from his feudal lord
[212] —a village headman, a district chief, or a prince—at the age of six-
teen. From this time until, perhaps, late middle age, he seems to have
[702] spent periods of each year away from his village attending military
[726] exercises in the larger towns or fighting in the continual wars against
the North Malabar chiefdoms, Walluvanad, or Palghat, or between
Cochin and Calicut themselves. Evidently Nayars also spent long pe-
riods in their villages, at least in the monsoon seasons, for they policed
the villages, arranged village festivals, were bailiffs on the landlord's
domain, and paid regular visits to local wives. Nayar youths were also
obliged to attend with their seniors and fulfill ceremonial obligations
[182] at the life-crisis rites of the landlord family. The rites were of course
[439] conducted in a grand manner and served as a focus for the collec-
tion and redistribution of perishable goods throughout the village.

613 Nayar youths also did some cultivation of vegetables and spices in
868 the gardens of their taravāds. Every youth received a rigorous train-
ing in cultivation methods, land management, the keeping of accounts,
241 and the construction of houses, either directly from his kāranavan or,
more usually, from the brothers of his own mother. However, there
was no clear-cut allocation of differential authority and economic roles
among the junior men of a taravād in this area. This was evidently
not necessary because the bulk of the work was done by tenants and
serfs, whose management could be most easily controlled by a single
experienced man. It was enough that a young Nayar should learn *how*
to manage and to cultivate so that he might one day replace his kāra-
navan. Their military duties were obviously the important ones for junior
[701] Nayars. It is unfortunate that we know next to nothing about how they
were organized in the army, or even if they fought in lineage groups
under the leadership of their mothers' brothers. All we know is that they
were for the most part recruited in lineages, with the members of one
lineage serving the same feudal lord.

613 The division of labor between the sexes was less rigid than in most
462 Hindu castes, but was well demarcated in daily life. Girls played with
boys, attended the village school, and even received training in the
[588] gymnasium, until they underwent the tāli rite, usually at about the age
of eleven. After this they were segregated from the men of their lin-
eage and concentrated their time on domestic tasks. For most pur-
poses the group of matrilineally related women formed a single work
unit under the informal authority of the oldest (or oldest competent)
woman. She gave out produce for cooking and allotted to each woman

3:Gough E-4, 5 (1947-1949)1961 AWll Kerala AWll
North Kerala Nayar

Nayar: North Kerala

The Nayars of North Kerala live between the Chandragiri and the Kora rivers. This area lay north of the Calicut kingdom and had been conquered by the Kolattiri kings at some period before the fourteenth century (Logan, 1951, I: 283; Innes, 1908: 57). It then disintegrated into the small kingdoms of Kolattunad, Kottayam, and Kadattunad. North Kerala was invaded from the Bednur kingdom of South Canara in the 1730's. It was later occupied by Muslim armies from Mysore between 1766 and 1792, after which it passed under British rule (Logan, 1951, I: 360, 399–473). This account deals with conditions before 1760, so far as these are known, and with the major changes of the nineteenth century.

Ecology

The mountains approach nearer to the sea in North Kerala than in Central Kerala. There are fewer stretches of lowland suitable for wet-rice cultivation, and gardens of fruits, nuts, vegetables, and spices on hillsides are more extensive. Since rice was the main subsistence crop, population density was lower than in Central Kerala. The houses of a village (*dēsam*) were scattered in gardens on hillsides surrounding a wet-rice flat in a valley. Villages were often separated by three to six miles of uncultivated scrub or jungle. Until the Mysoreans built roads after the 1760's, transport and communication by narrow mountain paths were difficult, especially in the heavy monsoons.

North Kerala had four major ports during the period of European trade—Cannanore, Tellicherry, Mahé, and Badagara (Hamilton, ed. 1727: 369–371). Pepper and other spices were exported from inland villages probably from Roman times, but villages were virtually self-sufficient for food until the mid-eighteenth century. After that time the Mysoreans' roads permitted greater import of goods both from the coast and from Mysore, and greater spatial mobility. In the nineteenth century cash-crop farming for export increased, as did imports of

3:Gough E-4, 5 (1947-1949)1961 AWll Kerala AWll
North Kerala Nayar

439 food and other goods. The population expanded and much formerly
[161] waste land was brought under cultivation as gardens for the produc-
[241] tion of coconuts, pepper, cashew nuts, and cinnamon. Higher in the
[464] mountains Europeans developed estates of tea, coffee, and spices,
[496] which attracted wage labor from villages to the west. The develop-
ment of the steamship, the opening of the Suez Canal in 1869, and
the entry of railways into Kerala in the 1860's were significant events
in this process.

Political and Economic Systems

564 Traditionally, a hierarchy of the major Hindu castes was present as
[566] in Central Kerala, except that large areas of North Kerala had no
Pulayas or agricultural serfs (*ibid.*, I: 148). Nambudiri Brahmans
were fewer than in Central Kerala, but they controlled a small num-
ber of temple estates and claimed religious superiority over the Nayar
439 rulers. Muslims were the dominant trading population of the ports
563 and inland trading centers.

631 The mountainous terrain, heavy rainfall, poor communications,
sparse population, and comparatively low productivity made politi-
cal centralization more difficult than in Central Kerala. The ancient
Kolattiri kingdom was divided into chiefdoms and villages in a man-
ner similar to the later kingdom of the Zamorin, but judicial con-
trol was perhaps never as well centralized as in the Calicut kingdom.
175 From the fourteenth century, when the Zamorins captured most of
635 the Arab trade, the Kolattiri kingship lost some of its former power.
[634] The kingdom disintegrated into three smaller, virtually independent
kingdoms—Kolattunad, Kottayam, and Kadattunad—plus a number
of small border chiefdoms of uncertain allegiance (*ibid.*, I: 343–344).
174 Each of the three North Kerala kingdoms probably had a population
161 of between 150,000 and 250,000, in contrast to the Calicut kingdom,
635 which seems to have numbered some 600,000 to 720,000 (see note
5, page 473).

175 After 1500 each of the North Kerala rulers sought the help of one
648 or another of the mutually hostile European and Middle Eastern trad-
634 ing powers, thus maintaining a state of fragmentation until the My-
635 sorean conquest. In the struggles of the seventeenth and eighteenth
centuries some new Nayar chiefs also arose with mushroom rapidity
on the basis of European support and gained partially autonomous
sway over small groups of villages. Political and social mobility among
Nayar aristocrats was thus more marked in North Kerala than in the
more stable central kingdoms. Indeed, a North Kerala proverb re-

3:Gough E-4, 5 (1947-1949)1961 AW11 Kerala AW11
North Kerala Nayar

marks that "When a high-caste Nayar becomes ripe, he turns into a king."

Low productivity and poor communications perhaps made the exaction of tribute more difficult than in Central Kerala, and this fact, plus the uncertain nature of trade, made the local rulers perennially short of funds. This is probably the reason why, although they were trained for warfare in gymnasia in their villages, Nayars were not regularly conscripted into a national army. Instead, they merely fought sporadically on behalf of local chiefs. Further, chiefs and village headmen were insufficiently strong to bring all the land under their control. Their domains were larger than those of Nayar commoners, but most commoner Nayar property groups were independent small landlords in their own right within their villages. Since they were not full-time warriors and since in many areas they had no serfs, Nayar commoners also did part of their own cultivation on their small estates. Part of their land, however, they leased to Tiyyar tenants as in Central Kerala. The polluting castes of village servants had the same rights and spatial distribution as in Central Kerala. In general, the economic processes of reciprocity and redistribution in villages proceeded in a comparable manner.

As independent warrior-cultivators, the Nayar commoners were not divided into separate castes of retainers owing allegiance as vassals and *kānam* tenants to different kinds of lords. Most villages were nominally under Nayar village headmen. In villages of the Kottayam and Kadattunad kingdoms, both the headman's lineage and those of the Nayar commoners belonged to a large caste called Nambiars, who appear to have intermarried throughout the kingdom. Although of the same general caste as commoners, and not forbidden by religious law from intermarrying equally with commoners, Nambiar village headmen's lineages tended, however, to intermarry only with each other or to take wives only from the commoners, occasionally giving their own women in marriage to chiefs or Brahmans. Chiefs claimed a higher caste rank as Samantan Nambiars, and royalty as Kshattriyas. These aristocratic lineages conducted hypergamous marriages with each other and with Nambudiris as in Central Kerela.

Judicial processes were somewhat less centralized than in the Central kingdoms. At least in theory, grave crimes and civil disputes in urban centers seem to have been tried in royal courts, but most civil disputes inland were apparently tried by local chiefs. Under the chiefs, caste assemblies of neighborhoods took care of crimes against religious law as in the Central kingdoms. Murder among Nayars

776
821 during that night for fear of calumny. There, the men
do not care much. We will now bid adieu to Mr. Gopal
[184] Pannikar, but not without thanking him for all he has
told us about his own people.

241 Uchâl (Uchaval) is the term used for the first three
days of the Malayalam month Makaram, usually falling
between the 15th and 20th January. All over Malabar,
[243] with the exception of Wynâd, above the ghâts, there are
two crops of rice every year, one with the south-west, one
[132] with the north-east monsoon. Elsewhere in Southern
India rice land is always irrigated, but in Malabar there
[776] is no such thing, practically, as irrigation, the heavy
rainfall rendering it unnecessary, and the earth goddess—
Bhûmi Dêvi—brings forth her fruit under the stimulus of
the rain from heaven. She produces the crops as a
female produces her children, and from the 1st of the
month Makaram, she rests until the cultivator again
begins to disturb her, three months later, when the
showers preceding the south-west monsoon fall. Uchâl
is the period of three days when the earth goddess mens-
truates. Granaries and all receptacles of grain are closed
during Uchâl—they are not even visited. Paddy is not
sold. No implement of cultivation is touched. The rice
to be used during the three days is pounded out before-
hand and kept separate. But it is no season of gloom;
241 rather is it one of festivity. As particular forms of food
252 partaken on specific occasions have an interest of their
262 own, we must not omit description of the Uchâl cake—
the Pâla Ata. (Pâla—spathe of the areca-palm, Ata—
cake). A paste is made of rice flour and water and
spread thickly (about an inch thick) on one side of two
pieces of the spathe of the areca-palm, each piece being
from 2 to 3 feet in length and about 8 inches wide.
Powdered jaggery, scraped cocoanut, powdered ginger, a
little garlic and other condiments, are then put in small
quantities on the paste. The two pieces of the spathe
are then placed together, and they are stitched all round
the edges. The whole is covered over with soft red mud
and put into a fire where it is kept until the mud covering
cracks. The cake is then cooked and ready for eating.
It is cut and distributed to members of the family and
friends.

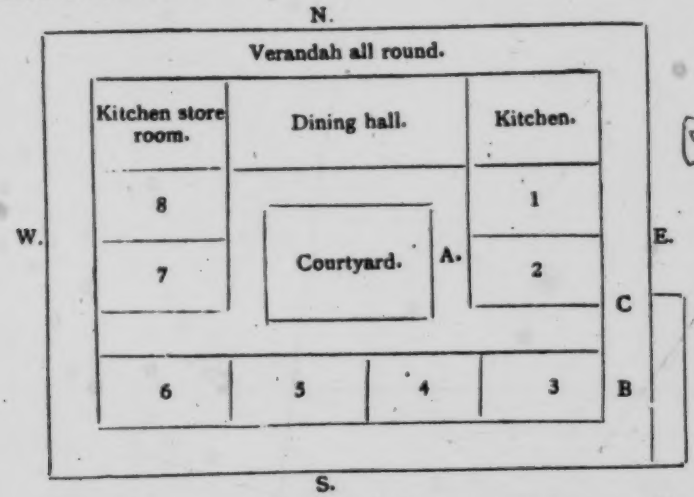
564 In parts of Malabar the Tîyan tenants present these
262 cakes to their Nâyar landlords as a token of allegiance
466 or submission. Rice is the only article of food which if
241 prepared by a Tîyan the Nâyar cannot eat; so the Nâyar
has no caste scruples about eating the Pâla Ata prepared

6:Fawcett G-5 (ca. 1900)1915
AWll Kerala AWll
Nayar

564
for him by the Tîyan at Uchâl. I recollect a case of 262
murder which arose out of nothing more or less than a 466
Tîyan tenant's refusal to present his Nâyar landlord with 241
a Pâla Ata at Uchâl. I once tried to preserve one of these cakes, but the results were too disastrous for description.*

HABITATIONS.

A house may face east or west; never north or south. 342
As a rule the Nâyar's house faces the east. Every [351]
garden is enclosed by a bank, a hedge, or a fencing of some kind, and entrance is to be made at one point only, the east, where there is a gate-house, or, as in the case of of the poorest houses a small portico, or open doorway roofed over. One never walks straight through this; there is always a kind of stile to surmount. It is the same everywhere in Malabar, and not only amongst the Nâyars. The following is a plan of a nâlupura or four- 342
sided house, which may be taken as representative of the 556
houses of the rich:



[778]

Numbers 6 and 7 are rooms which are used generally for storing grain.

At A is a staircase leading to the room of the upper story occupied by the female members of the family. At B is a staircase to the rooms of the upper story

*For much of the information regarding Uchâl I am indebted to Mr. M. Raman Menon. [115]

8:Panikkar I-4, 5 (no date) 1918 AWII Kerala AWII
Nayar

valent among them also. The more one looks into these matters the more one becomes clear that in the unorganised and uneducated human mind, be it "civilised" or be it primitive, there is a horizontal stratification of the most contradictory ideas, which lie absolutely undisturbed in the ordinary course of life. In the mind of the ordinary man whose *forte* is not clear thinking, a great deal of intermingling of such ideas might take place. It is no uncommon sight to see a thoroughly Hindu-ised Nāyar who talks about Absolutism and Illusion, and believes in them, paying a *Kāniyin* to get the devil out of his little niece. This is, perhaps, the truth which lies midway between those who assert, like Dr. Frazer, that magic and religion are hostile and cannot be reconciled, and those who, like Dr. Marett, hold that in their origin they are the same, that it is in their character as looked upon by society they differ. The view I have maintained here is that religion and magic are different in their psychological and emotional effects and that Dr. Frazer is right when he says that they are at bottom hostile. But the almost universal coexistence of magic and religion is due to the attitude of society which tolerates all contradictions and insists only on their effect being for social welfare.

VII.—THE MATERIAL CULTURE OF THE NĀYARS.

Occupation.—The Nāyars are at present an essentially agricultural population. The vast majority of them are peasant proprietors owning small farms. Rice and coco-nuts are the chief things cultivated, though in North Malabar pepper and cardoman have also their share.

With regard to these matters the Nāyars have attained a certain stage of excellence. Their coco-nut estates are planted with a considerable amount of scientific skill and they are proficient in the industries which are allied to coco-nut cultivation; such as coir-matting, copra making and extraction of coco-nut oil. The extreme fertility of the land has made agricutural chemistry, as far as coco-nut and rice cultivation are concerned, a matter of secondary importance; and even to-day there are very few Nāyars who have studied the Western methods of agriculture.

As each Nāyar family generally lives in a compound of its own, coco-nut cultivation is generally in small farms. Extensive coco-nut plantations owned by the same man are very few. The position is much like that in England before the Enclosures. Even if all the land in a particular area is owned by the same person it is seldom enclosed and transformed into one large estate. On the other hand, they continue to be regarded as separate compounds and the houses on them are generally occupied either by Nāyar tenants or by Pulaya slaves.

The fact that Nāyar families live in garden houses is one of great significance. Horticulture is practised with great interest in all families, rich as well as poor. It is, in fact, very seldom that any Nāyar family uses vegetables bought from the market.

8:Panikkar I-4, 5 (no date) 1918 AWll Kerala AWll Nayar

241 market. All that is necessary is grown in the compound. The great difficulty of village life, effective sanitation, becomes an easy matter.

241 56 Rice cultivation is still based on serf-labour. The Pulayas were the slaves of Nāyars till nearly fifty years ago, when slavery was abolished. But the abolition of slavery has only changed the legal status of the Pulaya. He still remains a landless labourer effectively bound by his former chains, by the great social barrier of caste and the greater difficulty of poverty and ignorance. The Pulaya is an agricultural labourer and nothing else. As long as he remains attached to one family he receives certain sums of money in times of distress, pieces of cloth and food on auspicious occasions, extra payment at childbirth, etc. He loses all this for an insecure wage and a nominal freedom if he leaves his old master. The Pulayas, therefore, have mostly remained serfs in spite of the abolition of slavery.

241 In fertile districts the ordinary methods of cultivation are followed. In the less fertile parts the system of leaving the farms fallow in alternate years, or occasionally once in three years, is followed.

241 796 The harvest time is between April and May. Naturally the gayest part of the Nāyar year is in May and June. The great festivals of all the temples from one end of Malabar to another fall in this part of the year. The festival in a temple extends to ten days, but the last two days are the most important. Very seldom these festivals overlap, and therefore for two full months the Nāyars enjoy an almost uninterrupted carnival. In these places poets from the length and breadth of Malabar come to meet their confrères, artists to exhibit their work, musicians to display their art, astrologers to practise their tricks, in short anybody who has wares to exhibit or sell. No one below a Nāyar in the hierarchy of caste can go to these places. They are, of course, admitted and entertained free. In some places even the food is supplied by the temple. The greatest of all these festive occasions is the *Puram* at Trichur, in Cochin State, which falls at the end of April or the beginning of May. Then there is the *Astamay* at Vaikom a little earlier in the year.

463 [441] The Nāyars, as we noticed at the beginning, are mainly an agricultural people; but a good many of them also go into trade. There are in these days Nāyars very high in Indian commercial circles.

The educated people generally choose the learned professions. In medicine, in law, in journalism, and in public life, they have been very successful. Especially in journalism it is interesting to note that a fair percentage of the editorial staff of the papers in India, whether European or Indian, is drawn from them. The only Indian member of the Viceroy's Cabinet is a Nāyar gentleman, Sir C. Sankaran Nāyar.

434 *Distribution of Wealth, Poverty, etc.*—The distribution of wealth among the Nāyars does not show the same great inequality as among other communities of India. There are moderately rich families having an average income of £10,000 a year, but extreme poverty is unknown. This is mostly due to two reasons:

9:Iyer E-4, 5 (ca. 1902-1906)1912
AWll Kerala AWll
Nayar

and dancing. This nightly routine of *pujas*, offerings, dancing, etc., is thus continued for the prescribed number of days.

On the morning following the last day, the votaries purify themselves by a bath and fetch branches of *pala* trees, and a dancing procession is organised, which wends its way through the Nayar streets, accompanied by the Goddess manifested through her *Velichapad*, to the temple of the Goddess, and from there disperse to their respective houses before evening after singing songs of praise and thanks-giving in honour of the Goddess. A pit, 15 feet long, 5 feet broad and 3 feet deep, is then made and filled with ten to fifteen cart-loads of fuel which is burned and reduced to glowing red hot charcoal. Here also is performed a *puja*. At about 4 A. M., the *Velichapad* through whom the Goddess manifests herself, the priests, the votaries, and lastly the caste-men, all walk over the fire several times.

The day dawns and the senior member of the Porayattu family sitting on the stool consecrated to Bhagavati, and covering his head with the silk cloth of the deity, propitiates her with offerings of fruits, cocoanuts, and fowls. The whole ceremony is thus brought to an end. The object of this propitiation is to protect people from the attacks of cholera, small-pox, and other epidemics.

Agricultural ceremonies.

Before closing this part of the subject, it may be noted that the agricultural year begins with the *Vishu* (first of Medam, about the middle of April) at which the hot weather is supposed to terminate. In families where the members pursue agriculture as a profession, they send for the local *Kaniyan* (astrologer), who estimates by astronomical calculations the agricultural prospects and the probable quantity of rain during the ensuing year. He is also asked to choose an auspicious day for ploughing, and on that day the master of the house goes to the seed-store with his Pulayan slaves and takes out a small quantity of each variety of seed, which he puts in a cup made of the leaves of the *kanniram* (nux vomica); he then places the cups in a basket near a lamp in the yard and places a small heap of rice around or near it. A new ploughshare fastened to a plough, and a pair of oxen are also brought, and these are painted with rice water. They are then taken in procession to the field, on reaching which the

[i.e., The Goddess Bhagavati -- Analyst]

9:Iyer E-4, 5 (ca. 1902-1906) 1912
AWll Kerala AWll
Nayar

Pulayan head-man raises a mound of earth on which are thrown a little manure and a handful of seed. He then yokes the cattle to the plough and turns a square plot of ground, taking care to have furrows made in it, and the plough dropped on the right. Ganapati is then propitiated with offerings, and the master throws the seed in the furrow, when the Pulaya head-man invokes the blessings of the gods and the deceased ancestors on the seeds that have been sown broadcast, on the cattle that are let loose, and also on the members of the family, and prays them for a good crop, much sunshine, and a good harvest. A cocoanut is then cut on the ploughshare, and if the hind portion is larger than the front one, it predicts an excellent harvest. If the nut is cut into two equal portions, the harvest will be moderate; if the cut passes through the eyes of the nut or if no water is left in the cut portions, misfortune is foreboded. The portions of the cocoanut are then picked up with the milk inside them and a leaf of the *tulsi* plant (Ocymum sanctum) is dropped into each; if the leaf turns to the right, a prosperous harvest is assured; if to the left, the contrary. The ceremonial concludes with loud shouts and invocations to the gods of husbandry; and the unused seeds are distributed among the workmen.

Nira:—The bringing in of the first fruits (*Nira*) is celebrated at the end of Karkadagam (August), previous to which the doors and windows of the houses are cleansed with the leaves of a tree called *paragam* (Ficus hispida) and decorated with rice flour, while the walls are white-washed, and the yard smeared with cow-dung. On the gates of the houses are placed various kinds of flowers together with their leaves and branches, *viz*:—*athi* (Ficus racemosa), *ithi* (Ficus venosa), *arayil* (Ficus religiosa), *peral* (Ficus Indica), *illi* (young bamboo leaves), *nelli* (Phyllanthus Emblica), *jack* (artocarpus integrifolia), and *mango* (manganefera indica). On the morning of the ceremonial day, the priest of the temple comes out preceded by a Marar blowing a conch-shell, when a bunch of the ears of paddy already placed by the Pulayans outside the outer wall of the temple is taken by him to the temple with the same Marar blowing the conch. Every house-holder then sends out to the fields a man duly purified by a bath and smeared with ashes to gather some rice. As he brings it to

9:Iyer E-4, 5 (ca. 1902-1906)1912
AWll Kerala AWll
Nayar

●241 the gate of the houses, he is met by a woman with a lighted lamp and some leaves on which is placed the rice. This is carried into the yard in procession, while those assembled cry out, 'Fill, fill, increase, fill the house, fill the basket, fill the stomach of the children'. Three times is it carried on a plantain leaf placed on a wooden plank while the lighted lamp is [782] placed on the right. Ganapati is then propitiated with offerings, and stalks of paddy with ears of grain in them are stuck [776] with cow-dung to the various parts of the house, to the agricultural implements, and even to trees. A sumptuous breakfast brings the ceremony to a close.

Puthari:—The next ceremony is the formal cooking and eating of the new rice (*Puthari*). It sometimes takes place on the *Nira* day, but generally it is an independent festival. An [777] auspicious day is chosen as soon as the first crop is harvested and threshed—a day which must be before the *Onam*. The [263] rice is cooked and eaten with a special curry made of *tagara* (Cassia tora) peas, the fruit of *puthari chunda* (Swertia Cherata), brinjals (Solanum Melongena) and green pumpkin.

Ucharal:—At the end of Makaram (January-February), when the second crop has been harvested, the year's agricultural operations are supposed to be over, and Mother Earth, *Bhumi Dévi*, is considered to rest during the hot weather until the [776] first shower begins. At the beginning of this period the Malayali observes a festival in honour of the Goddess' menstruation, which, like the *Roman Februria*, is supposed to take place at this time. On the last three days during this festival, all granaries are closed, paddy is not sold, and no implement of agriculture is touched, while even the rice to be eaten during these three days is pounded before-hand. On the first day before sunset the granaries are closed, some thorns and shrubs of broom are fixed to the door and cow-dung and ashes are spread in front of it. The next two days are holidays for all; the house must not be swept, nor the floors smeared with cow-dung, and the garden even may not be swept or watered. On the fourth day the granaries are opened, and a basketful of leaves is taken to the field and burnt with a little manure perhaps to indicate that the cultivator remains in possession.

9:Iyer E-4, 5 (ca. 1902-1906) 1912
AWll Kerala AWll
Nayar

Ucharal is the date on which all agricultural leases should expire, and demand for surrender of property should not be made at any other time, but the courts, by a liberal interpretation, have extended the term up to the day of *Vishu*. Special *Ucharal* festivals are held at Cherpulasseri in the Walluvanad Taluk and near Shoranur, at which straw models of cattle are taken in procession to the temples of Bhagavati.

241 425 [692] [184]

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for the most acute problem of Kerala, viz., abnormally high rate of unemployment. According to a survey carried out by the State Statistics Department open unemployment in the State was as high as 4.2 per cent (all-India 0.6%) and under-employment 9.6 per cent of the total population (all-India 6.0%).

The unemployment problem of Kerala might not have been so severe had there been a correspondingly rapid development of industries over the past few decades. In this sphere the State suffers from certain handicaps. Although the industrial sector in Kerala absorbs a high proportion of the working force (Kerala 19.1%; India 9.4%), the majority of them are engaged in very low productivity industries. The two major industries of Kerala, viz., coir and cashewnut are technologically very backward. Coir industry, which is organized as a cottage industry, absorbs 4-5 lakh persons. Cashewnut-processing, although organized on the lines of factory industry, is almost entirely unmechanized. As a result, labour productivity in the secondary sector is extremely low. Because of this, industrial sector in Kerala does not create any sizeable reinvestible surplus and the process of capital formation is hampered. The types of industries in which Kerala predominates, have not also aided the development of entrepreneurial talents. Kerala lacks in a long tradition of industrial enterprise. Most of the large scale industries which now exist in Kerala, for example, Fertilizers & Chemicals Travancore Ltd., Travancore-Cochin Chemicals Ltd., Indian Aluminium Company and Aluminium Industries Ltd., were started under the direct initiative of the governments of the erstwhile States of Travancore and Cochin or industrialists from other neighbouring States of India. No distinct body of local entrepreneurship has, therefore, developed in the State.

In addition, lack of sizable mineral deposits (except Ilmenite) adds to the difficulties which have been retarding industrial development of the State. Coal as well as all metallic raw materials for the industries of Kerala have to be transported over long distances from other parts of the country. But there are favourable factors compensating some of these deficiencies in the economic endowments of the State. The agricultural sector of Kerala abounds in a rich variety of high value yielding cash crops like coconut, pepper, rubber, arecanut, tea, cashewnut, cardamom and coffee. These crops not only provide considerable incomes for the farmers, but are a good source of foreign exchange earnings and provide valuable raw materials for the industries. A vast potential for generation of low-cost hydro-electric power makes up for the absence of fossil fuels. Rich forest and fishery resources, a highly intelligent and literate labour force, easy accessibility to most parts of the State through a wide network of roadways, and the scenic beauty of its landscape capable of attracting tourists, are some of the other assets of Kerala.

As a result of the present survey, several lines of technically and economically feasible developments have been suggested in this report in the industrial and other fields. The total impact of these developments would be to raise the per capita income of the State from the present level of Rs. 240 (at 1955-56 prices) to Rs. 404 (at the same price level) by 1970-71. State income would rise from Rs. 400 crores (at 1955-56 prices) to Rs. 812.8 crores, i.e., at an average annual rate of 10.3 per cent. The targets are undoubtedly on the high side, but the needs of Kerala in the context of its huge unemployment and very low per capita income demand a rather high

11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

is the undulating terrain of the midland with laterite soil. This middle region is rich in agricultural produce ; paddy, tapioca, spices and cashewnut being some of the main crops of this area.

Climate and Rainfall

1.5 The same diversity which characterizes the physical features of the State, also occurs in case of the climatic conditions. Whereas the highland has a cool and bracing climate throughout the year, the plains are hot and humid. However, the range of variation in temperature is very narrow, the normal limits being 80°–90°F.

1.6 The average level of annual rainfall is quite high being in the neighbourhood of 96 inches. In fact only Konkan and Malabar–South Konkan region with 109 inches and 121 inches surpass Kerala in the annual volume of rainfall. Since Kerala is fortunate in getting precipitation both from the south-west and the north-east monsoons, the rainfall is fairly spread out over the year. January to April are practically the only months which are completely dry. Moreover, annual variations in rainfall are also comparatively low. The co-efficient of mean deviation of annual rainfall is only 6.5 which is lower than that of all the other States except Assam (Table 1).[1] Draughts are, naturally, rare.

ECONOMIC CONSEQUENCES OF THE PHYSICAL CHARACTERISTICS

1.7 The influence of geological formation and geographical features on the economic structure and the growth possibilities varies from region to region. However, some of these stand out distinctly in the case of Kerala. The high mountainous wall of the Western Ghats and its close proximity to the sea is responsile for the heavy and regular rainfall which this State receives. The high characteristic rainfall, in turn, is responsible for a number of features of this State. The large number of high value yielding plantation crops and the rich forest growth owe their existence to the rainfall and the suitable climatic conditions found in the Western Ghats. The abundant rainfall has also provided Kerala with a large number of rivers. These are the storehouse of water resources—one of the chief assets of Kerala. There are 44 rivers in addition to a much larger number of small rivulets and streams. Forty-one of these rivers are west flowing and yield a total run off of 2,500 T.M.C. ft.[2] This is as high as 5 per cent of India's total water potential, whereas the total area of Kerala is only about 1.2 per cent of the area of India.

1.8 Since the Western Ghats are in close proximity of the sea coast, most of the rivers are also very short, the average length being only 40 miles. Only four rivers, viz., Beypore, Bharatapuzha, Periyar and Pamba are more than 100 miles in length. Although the rivers are small, they carry sizable flows and these provide the State with rich irrigation potential.

[text continues on p.4]

[1] Table 1 refers to the States as they existed before the reorganization. The conclusions, strictly speaking, refer to only Travancore-Cochin. However, they are broadly true of Kerala as a whole also.

[2] T.M.C. ft.—Thousand Million Cubic Feet.

Source: *Water Resources of Kerala*, PWD, Government of Kerala.

* [Table 1, appearing on p. 269 of the text, has not been processed -- Analyst]

11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

1.2 per cent of the total area of India, this contribution is quite significant. Yet the per capita income of Kerala in 1955-56 (Rs. 234.4) was lower than the all-India average (Rs. 261) by about Rs. 27, that is, 10.3 per cent.

1.22 The distribution of output and employment between primary, secondary and tertiary activities gives a broad indication of the stage of development an economy has attained. As a general rule, the more advanced the stage of economic development, the higher the proportion of income and employment originating in the secondary and tertiary activities. In Kerala the sectoral distribution of output and employment presents somewhat of a contrasting picture (Tables 3 and 4).[2] In terms of employment, the proportion of working force engaged in agriculture and allied occupations (55%) is much smaller than the corresponding all-India proportion (71.8%). This would seem to indicate that Kerala has perhaps reached a level of development somewhat comparable to that of a country like Japan. But the picture presented is quite different when one looks at the proportion of income contributed by the various sectors. The major share (49.1%) of output still originates in the primary sector (all-India: 45.4%). The secondary and tertiary sectors taken together contribute 50.9 per cent of the output against 54.6 per cent in the case of all-India.

1.23 Thus, while the sectoral distribution of population seems indicative of a diversified structure of the economy, the sectoral distribution of income does not. Two factors seem to provide a plausible explanation for this contrast. In view of the high density of population, the possibilities of providing gainful employment in the agricultural sector are naturally limited. Super-imposed upon this is the fact that as a result of the predominence of perennial crops, especially the coconuts, in the agricultural sector, the cropping pattern in Kerala is comparatively less labour-intensive. As a result of the operation of these forces, a large section of the population appears to have been forced to turn to some sort of non-agricultural activity or the other. But this seems to be of a "make-work" character. The technology of the secondary sector is traditional and its productivity is appallingly low.

1.24 In fact, productivity in Kerala's secondary sector is even lower than in the primary sector. This reversed position of Kerala only points to one of the strange paradoxes that occur in an under-developed economy. Ultimately, it is not so much the sectoral distribution of working force as the sectoral levels of productivity that are the determinants of growth. Productivity, in turn, is a function of the level of technology. Table 4 shows that the net output per worker in the secondary and tertiary sectors is lower than the average for all-India. As may be observed, low productivity is especially marked in the secondary sector which mostly covers the industries (Kerala—Rs. 539; all-India—Rs. 1,294).

Agriculture and Plantations

1.25 On the other hand, the primary sector in Kerala is comparatively better developed. This is a distinct feature of the State economy. Primary sector comprises agriculture, plantations, animal husbandry, forestry and fisheries. As may be seen from Table 4, labour productivity in the primary sector of Kerala is roughly

[2] [see pp. 270-271, category 11b -- Analyst]

11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

50 per cent higher than at the all-India level. Agricultural crops and the plantations, which form the main component of the primary sector, are largely produced for the market and are the basic factors responsible for imparting a high level of productivity to this sector.

1.26 Agriculture in the State is characterized by a high value yielding cropping pattern, good physical yields, a high intensity of cropping and superior cultivation techniques. During 1956-57 the intensity of cropping[1] was 119 per cent (all-India—113%). However, if field crops alone are taken into account, the cropping intensity shoots up to 150 per cent. It is the latter percentage which is the more relevant one, since the area covered by the perennial crops is irrelevant from the point of view of double or triple cropping. All these factors combine to make the agricultural sector of Kerala highly productive, the average level of agricultural output per net cultivated acre in Kerala being about Rs. 360 against Rs. 125 for the whole of India.

1.27 Kerala owes the superiority of its cropping pattern to the large number of high value yielding plantation crops grown in the State. Coconuts, the most important among these, occupy about 20 per cent of the gross cropped area and yield Rs. 450 per acre on an average. Other cash crops in the order of their importance in terms of area covered are pepper, rubber, arecanut, tea, cashewnut, cardamom, and coffee. Taken as a whole, they cover approximately 40 per cent of the gross cropped area.

1.28 Apart from the high productivity aspect of the plantation crops, they are of significance to the economy from two other angles. First, these crops provide the raw material for some of the key industries of the State. Coir making, the most important industry of the State, utilizes the outer husks of the coconuts. Similarly, cashewnut industry, the second most important industry of Kerala, also draws its raw material from the agricultural sector. Besides these, Kerala holds almost a complete all-India monopoly in the production of rubber, which is another important industrial raw material. Secondly, plantation crops derive their prominence from the fact that a large number of crops grown in Kerala find a good export market and are, therefore, very good foreign exchange earners.

1.29 One other feature of the Kerala economy which owes its origin to the agricultural sector may also be pointed out. Unlike the rest of India, where barter trade is still prevalent on a significant scale in the rural areas, Kerala economy is highly monetized. The large number of cash crops grown in the State are all brought to the market for sale. Secondly, since a high percentage of food requirements are obtained from the other parts of India, they are again channelled through the market. A high degree of commercialization of Kerala economy is one of the factors responsible for absorption of a large section of the population in the tertiary sector.

1.30 Otherwise agriculture in Kerala carries with it all the disquieting features common to Indian agriculture. The pressure of population on land is even severer here. The average size of holdings in Kerala has dwindled down to 1.5 acres

[1] Intensity of cropping is the ratio between gross cropped area and net sown area. It gives the degree to which a given piece of land is utilized.

against the all-India average of 7.5 acres; and over 60 per cent of the landholdings in Travancore-Cochin area are less than one acre in size.

1.31 The high pressure of population also reveals itself in an urge to push along the margin of cultivable area as far as possible. This is shown by the fact that the proportion of net sown area (45.25 lakh acres) to total area of the State was as high as 47.16 per cent against 39 per cent for the whole of India in 1956. The higher proportion assumes even a greater significance in view of the fact that forests cover over 25 per cent of the total area of Kerala (all-India—18%).

1.32 The agricultural labourers form a very high proportion of the agricultural population (Kerala 39%: India 17.5%), and the extent of under-employment among them is also one of the highest in India. The number of days of employment per agricultural labourer in Kerala was only 170 days per year[1], the lowest in the whole of India.

1.33 A deterioration in the position of the agricultural labourers is shown by the decline in the average annual income of agricultural labour households between 1951 and 1957. As can be seen from the table below, the average annual income of an agricultural labourer's household in Kerala declined from Rs. 486 in 1951 to Rs. 437 in 1956. This is a much steeper decline than observed in the case of the whole of India, presumably due to a higher rate of growth of population in Kerala than in India.

AVERAGE ANNUAL INCOME OF AGRICULTURAL LABOUR HOUSEHOLDS

	Kerala (Rs.)	*India* (Rs.)
1950-51	486	447
1956-57	437	437

Source: *Second Report of the Agricultural Labour Enquiry Committee.*

Consumption Pattern

1.34 The level of consumption expenditure per head is a good indicator of the standard of living prevailing in any region. Table 5[2] gives a comparative picture of the pattern of consumption expenditure for the rural areas of Travancore-Cochin[3] and India. As may be seen, the average monthly consumption expenditure in Kerala (Rs. 18.64) is lower than that in all-India (Rs. 21.44), indicating a somewhat lower standard of living in the State.

1.35 The break-up of total expenditure into different items of consumption reveals some interesting points. The expenditure on foodgrains, milk and milk products is not only absolutely lower in Kerala but even as a proportion of total expenditure, it is considerably below the all-India average. On the other hand, meat, egg, fish and 'other food' absorb quite a high proportion of consumption expenditure in Kerala. These differences reflect the relative scarcity of foodgrains

[1] *Report of the Agricultural Labour Enquiry Committee.*

[2] The data is compared for Travancore-Cochin and India (1952) because figures for Kerala State are not available. However, the conclusions are likely to be broadly true of Kerala also.

[3] [see p 272, category 11b -- Analysis]

11: India G-4,5 (1960-1961) 1962 AWII Kerala AWII

and milk products in the State as a result of which people have to lean more heavily on fish and tapioca.

1.36 Among the items of non-food expenditure the significant point is the higher percentage of expenditure devoted to clothing. The neatness and cleanliness of dress worn by the people of Kerala is evident even to a casual visitor to the State.

The Food Gap

1.37 The superior cropping pattern has also brought with it a huge food deficit. In this, Kerala leads all the other States. The current production of foodgrains is estimated at 9.6 lakh tons, whereas requirements on the basis of a norm of 17 ozs. per day would come to about 24 lakh tons, leaving a gap of nearly 14.6 lakh tons. The width of this gap is only partially closed by the consumption of tapioca as part of the diet by poorer sections of the people, although it does form an important second line of defence in the lean years as in 1940's when there was a severe food shortage.

1.38 Wide as the food gap in Kerala is, it has often led to the formulation of solutions which, if given effect to, would be retarding the operation of inherent growth factors in the Kerala economy. Every economy may present some "growth leaders", and development consists in stimulating and invigorating them. The climate and physical formation of Kerala favour the growth of a large number of valuable cash crops. It is this sector to which maximum attention should be devoted. Kerala is better suited to serve the role of an exchange economy which relies for its food requirements on the other parts of India and in return contributes to the economic development of the country by earning valuable foreign exchange through the export of raw and semi-processed commodities.

Other Primary Activities

1.39 Of the other three primary activities, viz., animal husbandry, forestry and fisheries, the former, that is, livestock is rather poorly developed. Due to the poor breed, and the natural deficiency in the livestock feed, the cattle is of poor quality with milk yields much lower than the all-India level. The only exception to this is poultry. Kerala can claim to have the best developed commercial poultry in India, the eggs produced in Kerala going even as far north as Punjab. However, in view of under-feeding and the poor conditions under which the birds are reared, there is still a lot of unexploited potential in poultry development.

1.40 Forestry and fishery are the two other sectors which hold an important place in the economy of Kerala. The forests in the State are rich in some of the valuable species like teak and rosewood. As a result of forest management on scientific lines and the high quality of forest growth, their yield per acre in Kerala during 1955-56 was as high as Rs. 18 against the all-India average of Rs. 5.6. This sector is crucial as a source of supply of industrial raw materials.

1.41 Kerala ranks foremost among the fish-producing States of India. In 1957 total fish landings in Kerala were 3.41 lakh tons. With only 10 per cent of the all-

Chapter 2

Agriculture and Plantation Crops

DISTINCTIVE FEATURES OF AGRICULTURAL SECTOR

161 A NUMBER OF distinctive features are characteristic of the agricultural sector of Kerala. 241 In the first place, Kerala surpasses all other regions of India in respect of the high pressure of population on land. Secondly, on account of the large number of valuable cash crops, the agricultural sector is more commercialized in the State than elsewhere. Thirdly, food production has always been far short of Kerala's requirements.

311 423 171 2.2 With the fast rising density of population, the margin of cultivation has been constantly receding. The proportion of net sown area to total geographical area is consequently much higher in Kerala (47.16%) than in the rest of India (all-India: 39.1%). The average size of land-holdings, however, is much smaller (1.5 acres) in Kerala (all-India: 7.5 acres). In the Travancore-Cochin area, 66 per cent of the holdings are below one acre in size. (Table 7)[2]

464 241 [171] 2.3 The scarcity of land in relation to population has been responsible for an acute state of unemployment and under-employment among the people in the rural areas. Unemployment is about three to four times higher in Kerala than in the rest of India. The acute state of unemployment is also accounted for by Kerala's cropping pattern which is comparatively less labour absorbing than in many other parts of India. The perennial crops which take up 47 per cent of the cultivated area need labour recurrently only for maintenance and harvesting[1] although crops like tea and rubber require human labour on a large scale for picking of the green leaves and tapping of rubber. The perennial crops require very little labour for basic operations such as preparation of seed bed, sowing, etc., except once in their life time.

433 241 434 2.4 However, the fact that the cropping pattern of Kerala is not labour-intensive is compensated to some extent by the higher value yield of the perennial crops per cultivated acre. The soil structure and climatic conditions in Kerala favour a high value yielding cropping pattern. On an average, cash crops contribute Rs. 100 crores (65%) to the income from agriculture (Rs. 151 crores). Of the cash crops, coconuts occupy 20.2 per cent of gross cropped area, standing next only to paddy which occupies 35.8 per cent of the gross cropped area. But the value yielded per acre for coconuts (Rs. 446) is more than twice that for paddy (Rs. 212). The position regarding the other crops is given in Table 9.[3]

433 241 2.5 In respect of plantation crops the only other State which approaches closest to Kerala is Assam where the proportion of cultivable area devoted to plantation

[1] This aspect is discussed in greater detail in the Chapter on Manpower No. 11.

[2] [see p. 273, cat. 116 -- Analyst]

[3] [see p. 275, cat. 116 -- Analyst]

11: India G-4, 5 (1960-1961) 1962 AWll Kerala AWll

crops is about 8 per cent of the gross cropped area. A direct consequence of this type of cropping pattern is the high degree of commercialization which has been attained in the agricultural sector. This has important implications for the State economy. The State exports its commercial crops, and imports its foodgrain requirements. In this exchange the State stands to gain since cash crops yield far higher return per unit of area than the food crops. Secondly, quite a few of the commercial crops grown in the State are of a perennial nature and require large investments. This has led to the establishment of numerous large scale organized plantations and farms, although small farms also play an important role.

2.6 A chronic food deficit is the third important feature of the agricultural sector, mentioned above (para 2.1). The current production of foodgrains is roughly 967,000 tons. Current requirements on the basis of a norm of 17 ozs.[1] of foodgrains per day per adult (unit) work out to a figure of 24 lakh tons. The gap between food requirements and the current level of production thus works out to over 50 per cent of total requirements. This is higher than in any other State. However, this need not cause excessive anxiety. It is not necessary for every State in the Union to try and achieve self-sufficiency in food at the cost of other more valuable commercial crops. From the long run point of view, the aim should be to strike a balance between supply and demand for foodgrains at the national, rather than, strictly, at the level of the State. The psychological desire to attain a balance between local supply and demand for foodgrains in the State is a legacy of the lean period of 1940–50 when the State was hard hit by the severe food shortage prevailing in the country.

Climate and Geographical Factors

2.7 The climate and rainfall in Kerala are excellently suited to the prevailing cropping pattern. The climate is cool and humid in the high ranges while it is humid and warm in the plains. The range of temperature variations during the year is very small, the maximum never going beyond 90°F and minimum rarely below 75°F. The humidity, however, is very high in the rainy season—about 90 per cent. The State is fortunate in respect of rainfall. The normal annual rainfall is 95 inches a year ; it may be as high as 150 inches in the high ranges, but nowhere it is less than 65 inches. Most of the precipitation occurs during May to September when the State receives the south-west monsoon. Taking the State as a whole, it may be said that it is one of the most wet areas in the country (Table 1).[2] Assam has about the same normal rainfall as Kerala. Only the Konkan coast (Bombay) and South Kanara (Mysore) exceed it. The annual deviation in rainfall is also comparatively low with the co-efficient of mean deviation at 6.5 per cent for Travancore-Cochin and 9.2 per cent for Malabar (Table 1). On the whole rains are more reliable in Kerala than in most other States.

2.8 Kerala has two distinct geographical divisions, namely, the Travancore-Cochin and the Malabar area. The soils of Travancore-Cochin area are generally

[1] The Nutritional Advisory Committee to the Government of India recommended 18 ozs. of foodgrains per adult unit per day as the desirable norm. We have used a slightly smaller figure (17 ozs. per day) in our calculations.

[2] [Table, appearing on p. 269 of the text, has not been processed – Analyst]

11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

intensity of cropping since the area covered by perennial crops, which is quite large in the case of Kerala, is irrelevant from the point of view of double or triple cropping. It will thus be seen that not only is the proportion of cultivable area to total area high in Kerala, but the degree of utilization of the cultivated area is also quite high.

FIELD CROPS

2.12 The techniques of cultivation as well as the economics of field crops differ widely from that of commercial plantation crops. The field crops are generally characteristic of the subsistence economy whereas the latter are largely market-oriented. Moreover, unlike field crops the plantation crops are perennial and do not require annual repetition of preliminary agricultural operations like ploughing, sowing, etc. The returns too vary widely. Field crops and plantations are, therefore, discussed separately in the pages that follow.

Cropping Pattern and Yields of Field Crops

2.13 Rice, the most important field crop, occupies a prominent place in the agricultural economy of Kerala. In 1958-59, it covered 1.9 million acres out of 2.7 million acres under field crops. The production of rice in the same year was 939,000 tons. While the rice acreage fell by only 0.4 per cent during 1951–59, its production during the same period leapt up by over 31 per cent. Increase in the yield rate during the same period was from 829 to 1,108 lbs. per acre (Table 11).[2] The growing appreciation among farmers of the utility of fertilizers, improved seeds and better techniques of cultivation is largely responsible for this steady improvement.

2.14 Next to rice, tapioca is the most important field crop of Kerala. During 1951–59, the area under the crop increased from 506,000 acres to 553,000 acres, that is by 11 per cent. The production of tapioca in 1958-59 was 1.5 million tons, that is, an increase of 4.6 per cent over 1950-51.

2.15 Tapioca and rice considered together, account for over 54 per cent of the net sown area which is the same as 90 per cent of the area under field crops. Among the remaining field crops, ginger, groundnut, sesamum, sugarcane and pulses are the most important ones. Ginger is primarily an export crop, and its fortunes fluctuate with the trend of foreign markets. During the recent years, the area under ginger has steadily declined from 30,000 acres in 1950-51 to 22,000 acres in 1958-59. Other field crops, however, have shown significant increases in area over the same period. The rate of increase is the highest for sugarcane, where it rose from mere 2,000 to 22,000 acres—an increase of 1,000 per cent in less than a decade. This is due to the commissioning of a sugar factory (900 tons crushing capacity per day) at Thiruvella in 1954. The output of sugarcane, however, rose by only 775 per cent. The next highest increase has been in pulses where the area rose by 287 per cent between 1951 and 1959. Pulses, with the exception of *tur* (*Cajanus indica*), are now increasingly raised as second or even third crop by availing of the moisture left in the soil after the harvest of paddy. This development owes

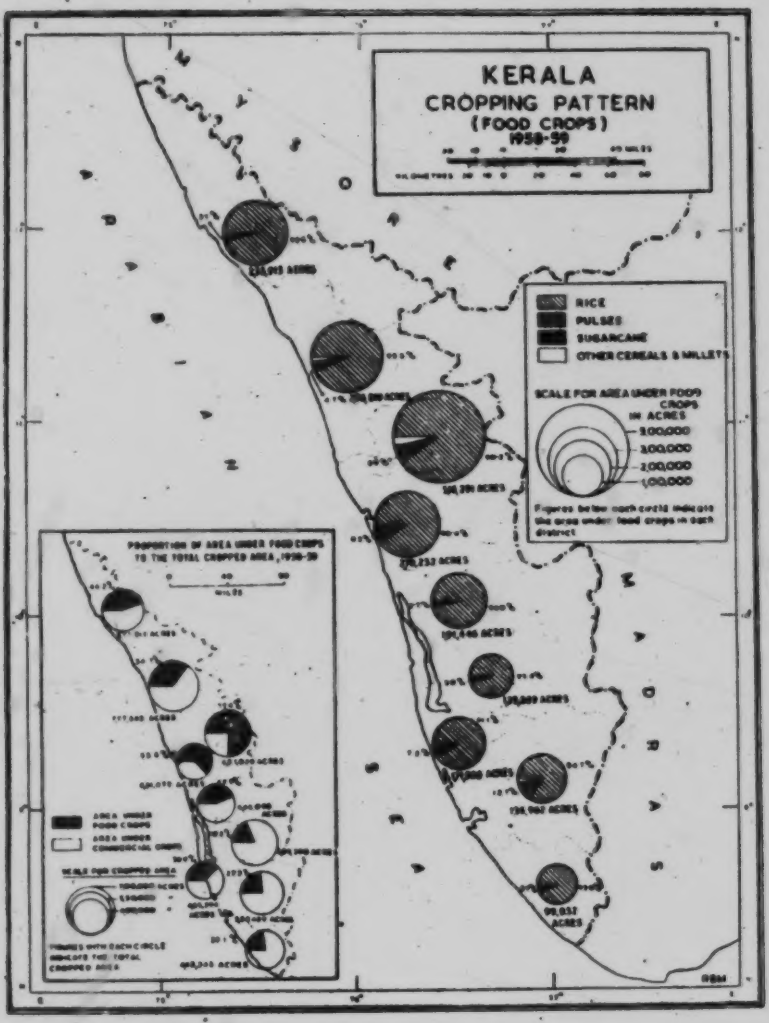
[2] [see p. 277, category 116 — Analyst]

[text continues on p. 28]

[P. 26]

MAP 6

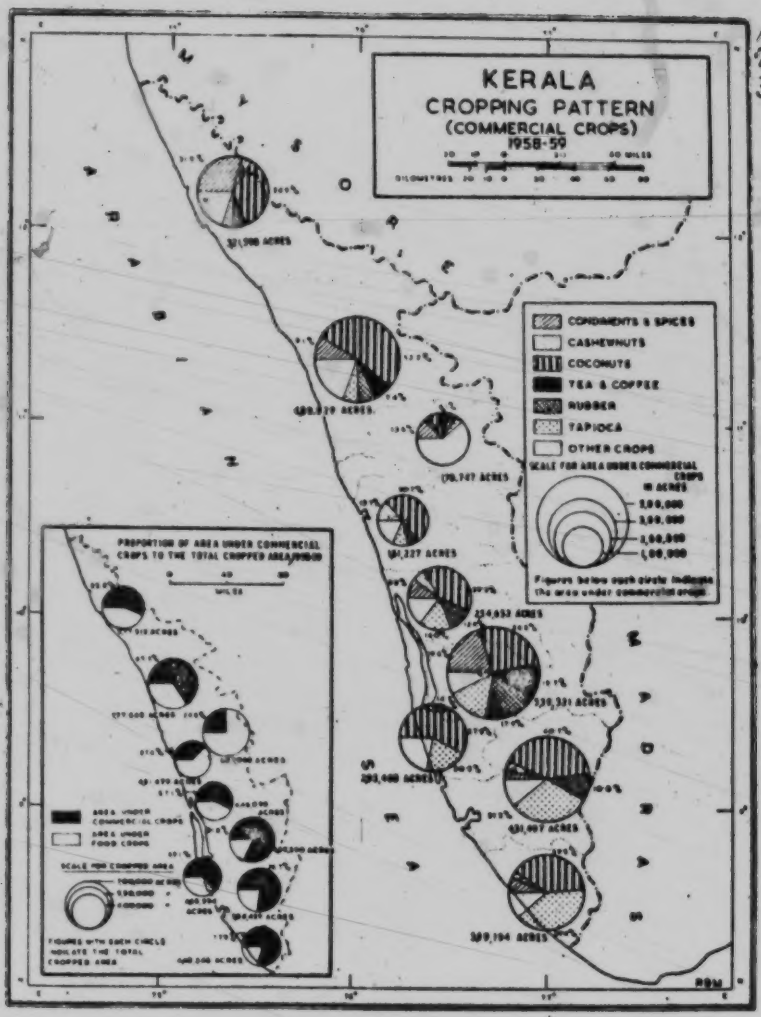
102
841
311



11: India G-4, 5 (1960-1961) 1962 AW11 Kerala AW11

[P. 27]

MAP 7



11: India G-4, 5 (1960-1961) 1962 AWll Kerala AWll

its success to the persevering efforts of the State Agriculture Department. The department has made a successful drive for pulse cultivation with a view to (*i*) raise the production of pulses in which the State is grossly deficit, (*ii*) to increase crop intensity, and (*iii*) to enrich soils by including a legume in the rotation.

2.16 During the same period the area under oilseeds rose by about 131 per cent. The area under all the millets, except ragi which rose by about 9 per cent, has registered a decline ; jowar area has declined by 33 per cent, and small millets by 53 per cent. Perhaps the increase in the area under some of the higher value crops such as oilseeds and sugarcane was at the expense of inferior and low value millet crops. This is another indication of the growing preference for high value crops. (Table 10)[2]

2.17 Land productivity is generally high in Kerala and compares very favourably with that in the other States of India. Yield of rice, the principal crop, was 1,108 lbs. per acre in 1958-59, which is about 20 per cent higher than the all-India average. Only the States of Madras and Andhra have higher yields. During 1951–59 the rice yield has increased by about 25 per cent (Table 11)[2] as a result of increased application of fertilizers, improved seeds and better agricultural practices. Similarly ragi is another high yielding crop with a yield of 1,290 lbs. per acre (1958-59)—the highest in India.

2.18 On the whole the yield rates for most of the crops have improved between the years 1951–59. For cotton and ragi, as in the case of paddy, the increase has been quite significant. On the other hand, there was a decline in the yield rate of jowar, groundnut and sugarcane. (Table 11)[2]

2.19 The latest districtwise disposition of area and production show that Palghat has the largest concentration of important food crops grown in the State. In 1958-59 it accounted for 29.2 per cent of the area under rice and one-third of rice production in the State. Palghat also leads in the production of millets and pulses. The district of Kottayam leads in plantation crops as well as in some of the other cash crops, for example, it had 32 per cent of area under ginger, 29 per cent of area under turmeric and 16.9 per cent of area under sugarcane.

2.20 There is a considerable degree of regional specialization in some of the minor field crops. For example, Palghat accounts for over 90 per cent of the area for the production of cotton and groundnut in Kerala. Similarly sesamum is concentrated in Alleppey (61%), tur (56%) and smaller millets (69%) in Palghat, and chillies (51%) and tobacco (95%) in Cannanore. This specialization is due to favourable conditions for the cultivation of these crops in the areas where they are being grown.

Future Development

2.21 It is generally known that agriculture aids economic development in three different ways. By providing a surplus of food requirements, it sustains a growing urban population. Secondly, agriculture is an important source of industrial raw materials and, in under-developed regions, generally forms the base for a large number of industries. This is particularly so in Kerala where over 70 per cent of the factory workers are employed in agro-based industries. Lastly, higher agricultural yields

[2] [see p 276, category 116 -- Analyst]
[2] [see p 277, category 116 -- Analyst]

II: India G-4,5 (1960-1961) 1962 AWII Kerala AWII

ensure a better return to the farmer. This creates an incentive for achieving a still higher level of production. And at the same time, the rise in agricultural income provides a substantial purchasing power for absorbing consumer goods output of the industrial sector. The need for an emphasis on agricultural development is, therefore, very much inter-related with steady industrial growth.

2.22 Agricultural development in Kerala can follow two possible directions. First; the aim could be to raise the yield rate and output of the existing crops with a special emphasis on increasing the food production. Alternatively, the policy could be directed towards bringing about a modification in the existing cropping pattern by giving greater weightage to the commercial crops and thus ensuring better returns from the land. On the basis of available evidence; it seems that for Kerala the latter course of action would be the more appropriate one. It has already been pointed out that it is not necessary for each State to try to achieve, complete self-sufficiency in foodgrains.

2.23. A wide gap in food requirements of the extent which exists at present in the State, can be covered only through extension of area under paddy in addition to increase in the yield per acre. Whereas efforts at raising the yield rate are justified by all means, it would be unwise to divert land from commercial crops to the cultivation of paddy. Apart from direct importance of cash crops to the industrial growth of Kerala in the form of raw material supply, commercial crops make a substantial contribution to the industrial effort of India through the large amount of foreign exchange earnings they bring in annually. Export of commodities like tea, pepper, cardamom, cashewnut and coconut products from Kerala earn foreign exchange to the tune of Rs. 55 crores every year—roughly one-twelfth of overall foreign exchange earnings of the entire country. It would, therefore, be in the interest of the State economy to maximize returns from land by growing higher value crops in place of low value crops like tapioca and small millets in as much area as possible. This would require a reversal of the policy pursued so far in favour of attaining self-sufficiency in food within the State. The gap in food requirements which cannot be covered through intensive measures of paddy cultivation could continue to be met by imports from the other parts of India. Since the relative advantage lies in the cultivation of commercial crops, some of which can be grown only in Kerala, attention should be focussed on the development of cash crops whereas the problem of wiping out the food deficit can be relegated to a secondary place for the present.

2.24 The extension of the area under commercial crops should be undertaken on a scientific and planned basis. Considerations such as gross value of product per unit area and demand for the crop and suitability of soil are some of the important aspects that have to be examined in this connection. It is not possible to state the exact extent and nature of substitution without an intensive land use potential survey of different regions. A survey of this type was being carried out by the State Agriculture Department. However, the future scope for some of commercial field crops is analysed below on the basis of whatever information is available. The possibilities of commercial plantation crops are discussed in the last part of this chapter.

.11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

improved seeds would, therefore, be much larger in Kerala than elsewhere in the country. For full coverage of the area by improved seeds, it is estimated that by 1971, 120 new farms would have to be organized. Investment on each of these farms, including a seed store, would be about Rs. 75,000. Total investment on additional seed farms would, therefore, amount to about Rs. 90 lakhs. Assuming an increase of 10 per cent in yield, additional production due to full coverage from improved seeds by the end of the Fourth Plan would be about 75,000 tons of foodgrains alone. Similar increases may be achieved for other agricultural commodities also.

Manures and Fertilizers

2.42 The soils of Kerala are not fertile. Being of lateritic origin they are highly porous. More than 50 per cent of the cultivated soils contain less than 15 per cent of clay complex. Continuous cropping accompanied by heavy leaching (a direct consequence of heavy rainfall) has made the soils extremely deficient in phosphates, nitrogen and potash, and also in calcium, magnesium and other minor elements.

2.43 Inspite of the poor fertility of soils, the crop yields are good. This is primarily due to the application of a large amount of organic manures to the fields. In addition to organic manures, the farmers also use fertilizers. Farmers of Kerala were among the first to realize benefits of fertilizers and put them to use. But the quantity used is small owing to inadequate supplies. Even a modest consumption target of 14,200 tons of fertilizers[1] per annum for the Second Plan had to be revised to 5,800 tons on account of this shortage. During 1958-59, the State consumed 5,000 tons of nitrogenous ferilizers mostly in the form of ammonium sulphate and potassic fertilizers. This works out to roughly 1.2 lbs. per acre of nitrogen and less than 0.1 lb. per acre of phosphate and potash.

2.44 In future, the emphasis should be placed both on manures and on fertilizers. Organic manures, in addition to providing the plant nutrition, help in conditioning the soil, whereas fertilizers are necessary for supplementing nutritional needs which the organic manures are not able to provide fully. A joint and balanced application of organic manures and fertilizers is, therefore, necessary for getting the desired results.

2.45 All possible sources in the State should be fully exploited for increasing the supply of organic manures. There is scope for greater utilization of urban wastes and green leaves. There is also scope for fuller utilization of the existing production of press mud and for increasing the supply of green matter by raising green manure plants on the borders of fields and banks of river streams. The supply of organic manures may be further augmented by fuller utilization of fish waste and inedible or spoilt fish. Such possibilities should be investigated.

2.46 As emphasized above, a desired level of crop nutrition will not be possible unless manures are adequately supplemented by fertilizers. The supplementary dosage of fertilizers differs from crop to crop depending upon the nature of the crop, length of the growing period and the yield rates. The dosage is the highest for banana, with NPK (Nitrogen, Phosphorous and Potash ratio at 150 : 150 : 300 lbs.

[1] 9,680 tons of N, 3,720 tons of P_2O_5 and 840 tons of K.

11: India G-4,5 (1960-1961) 1962 AWII Kerala AWII

per acre, while the same for paddy is only 40 :40 :30. It is very low for leguminous crops—at 0 :20 :20 for pulses and 20 : 20 : 20 for groundnuts.[1] These dosages are not the optimum. These are just the average that may be considered adequate during a period of shortage of fertilizers. There are many farmers who apply as much as 80 lbs. of nitrogen per acre to rice while there are others who, on account of shortage of fertilizers apply only 15 lbs. per acre. Since fertilizer allocations are not made for individual crops, a dosage ratio of NPK 40 : 40 : 30 per acre may be considered as an average requirement for the State in the future. But in view of shortages in the country for phosphatic and potassic fertilizers, the dosage may be put at 40 : 20 : 15. The total annual requirements of crop fields on this basis would be 35,700 tons of nitrogen, 17,700 tons of P_2O_5 and 13,400 tons of K_2O.

2.47 In view of the peculiar soil conditions and reaction, attention will have to be paid to the correct choice of fertilizers. At present fertilizers are being used indiscriminately. For example, ammonium sulphate, the most popular fertilizer in the State, is being used even on high acidity soils. Such applications may do damage to the soil by increasing further the soil acidity. The selection of various types of fertilizers in the future should, therefore, be on rational and scientific basis, so that the fertilizers also help in correcting the soil deficiencies. Urea is, perhaps, eminently suited for Kerala. It is, however, not possible to make any specific suggestion on the requisite type of fertilizers for the State as adequate data on the performance of various types of fertilizers are not available. It is, therefore, suggested that a large number of trials should be conducted all over the State with a view to choosing the right type of fertilizer and dosages for various crops in different regions. The result of such trials should be made known to users through the extension machinery.

2.48 It is not possible to give a precise estimate of the increase in agricultural production from the proposed fertilizer consumption programme owing to difficulties in estimating the share of fertilizers for different crops. Knowledge about the rates of return from fertilizers for various crops, is also inadequate. Assuming, however, that roughly three-fourths of the proposed quantity is used for rice and other foodgrains, the additional production of cereals and pulses on the basis of available yardsticks may be expected to be 387,000 tons by 1970-71.

Irrigation

2.49 *Existing Position*: Irrigation resources of Kerala are very rich. In all, there are 44 rivers in the State. The run off of water from the west-flowing rivers is estimated to be of the order of 2,560,800 million cubic feet per annum, while that of east-flowing rivers is 196,000 million cubic feet.

2.50 The first irrigation project to be taken up in the State was the Kodayar Extension Scheme which was completed by 1947. At the beginning of the First Plan

[1] Dosage for NPK (ratio in lbs. per acre for other crops) is

Tapioca	80 :80 :160	Ginger	50 :50 :100
Oilseeds	10 :20 : 20	Sugarcane	100 :60 :100
Cotton	30 :30 : 50	Fruits/ Vegetables	50 :50 :100

11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

period, the State had three major irrigation projects, viz., Peechi and Chalakudy I, apart from the Kodayar Extension Scheme. During the First Plan, two more projects viz., Vazhani and Neyyar I were added to the list. At the time of the reorganization of States, Nanjinand area, served by the Kodayar Extension Scheme, got transferred to Madras but in return Kerala gained three projects through the annexation of Malabar area viz., Malampuzha, Walayar and Mangalam. During the Second Plan period, six more projects have been completed. By 1956-57 the total irrigated area had reached 8.29 lakh acres, that is, about 30 per cent of the net sown area under field crops.

2.51 Canals are the main source of irrigation in Kerala accounting for about 50 per cent of the gross irrigated area (Table 12).[2] Tanks and wells irrigate 9.28 per cent and 3.49 per cent respectively of the gross irrigated area. One interesting feature about irrigation in Kerala is that irrigation from the 'other sources' accounts for a particularly high percentage of area irrigated, viz., 37 per cent. These other sources include hill streams, small diversion works, water pumped from streams and rivers, etc. These are quite numerous in Kerala on account of the high rainfall received in the State.

2.52 The main beneficiary from existing irrigation facilities is paddy, accounting for over two-thirds of the gross irrigated acreage. The remaining irrigated area is shared by other food and non-food crops. The exact breakdown is not available but it is believed that banana and coconut account for much of what is left.

2.53 The benefit accruing from the 13 irrigation works which had been taken up till the end of the Second Plan and their relative importance are given in the following table.[1]

Benefit	*Area benefiting (acres)*	*Percentage*
One new crop	55,314	20.11
New conversion to double cropped paddy	63,786	22.98
Stabilization of one crop	25,300	9.11
Stabilization of two crops	120,660	43.48
Drainage, flood control, dewatering, etc.	12,000	4.32
TOTAL	*277,060*	*100.00*

2.54 It can be seen from the above table that the largest extent of benefit is received from the stabilization of two crops. Conversion of fresh areas to cultivation of paddy as a result of the new irrigation facilities is only 22 per cent of the total area benefited. A large proportion of benefit in the form of stabilization of existing crops rather than in the form of double or triple cropping is due to the fact that Kerala gets assured rainfall both from the south-western as well as the north-eastern monsoon. There are thus very few patches of land which are not able to grow paddy due to the absence of rainfall.

2.55 In terms of additional output of foodgrains, however, the benefit from new conversions is much greater than from stabilization, as can be seen from the

[1] Based on figures supplied by the Department of Irrigation, Kerala.

[2] [see p. 228, category 11B — Analyst]

11: India G-4,5 (1960-1961) 1962 AWII Kerala AWII

following table.

Benefit	Additional output of food-grains per acre (in tons)
One new crop	0.5
New conversion to double cropped paddy	1.0
Stabilization of one crop	0.1
Stabilization of two crops	0.2

On the basis of these co-efficients, increase in output contributed by the 13 projects comes to 129,636 tons, giving a weighted average of 0.47 tons of additional output of paddy per acre.

2.56 *Future Development of Irrigation*: Due to a difficult and uneven terrain, the cost of digging canals and constructing dams is comparatively high in Kerala. The average capital cost per acre for irrigation from major and medium schemes is roughly Rs. 885 per acre as against the all-India average of roughly Rs. 500 per acre. The expensive nature of irrigation schemes and the high level of rainfall which Kerala receives, naturally set a limit to the development of irrigation works.

2.57 The proportion of new conversions out of the total area benefited is rather small. However, double and triple cropping can be made possible only by ensuring regular water supply through the irrigation schemes. Irrigation facilities are also essential for increased application of fertilizers to the second and third crops.

2.58 A Master Plan for the irrigation resources of Kerala was prepared by the Irrigation Branch of the Public Works Department. According to it, the additional irrigation potential available in the State is about 896,000 acres. Of this 822,000 acres would be for the existing area and only 74,000 acres for conversion of dry land to irrigated area. The cost of the above programme is estimated at Rs. 79.34 crores. Rice would be the main beneficiary from this irrigation programme. Additional annual production of rice from these schemes would be roughly 4.49 lakh tons valued at Rs. 17.9 crores. In addition, if other benefits such as raising the third crop of pulses and the extension of area under high value crops like coconut, sugarcane, banana, cotton, etc., are also taken into account, the benefits may amount to another Rs. 10.0 crores. This would give a capital output ratio of about 2.5.

2.59 In view of the particular conditions prevailing in Kerala, it seems desirable that a greater emphasis should be placed on minor rather than on major irrigation works. There is justification for adopting this point of view on a number of grounds. Major irrigation works are a necessity in those areas where vast areas of cultivable land can be opened up by construction of major irrigation projects. In Kerala, as pointed out above, the benefit lies mainly in providing irrigation facilities to those areas where one crop is already being raised. Since the size of investment required for major irrigation works is much larger is comparison to that required for minor work and capital resources are scarce, minor irrigation works are far more suitable for Kerala. The nature of terrain in Kerala also makes it difficult to lay a vast network of canals. Moreover, for major irrigation works, the State has to bear all the investment cost whereas minor irrigation works help in tapping localized investible resources available with the agriculturists.

11: India G-4,5 (1960-1961) 1962 AWll Kerala AWll

2.60 Minor irrigation works have other advantages as well. In the first place, the period of construction being much shorter than in the case of major works, the lag between investment and yield is comparatively short. Secondly, since the minor works are executed on a decentralized basis they have greater effectiveness in utilizing the pockets of surplus manpower. The problem of organizing manpower squads is likely to be less intractable. Thirdly, in Kerala there are a large number of irrigable tracts which do not occur in contiguous blocks. These scattered areas cannot get the canal water facilities provided by major irrigation dams but there are a number of streams which are conveniently situated for minor irrigation development.

2.61 Keeping these points in view, it is suggested that during the coming decade it is not necessary to develop the full potential of 8.96 lakh acres through major irrigation projects. However, the State should try to implement the schemes which have been suggested by the Master Plan for inclusion during the Third and Fourth Plans. The list of these schemes is given in Table 15. These would benefit an area of 4.33 lakhs at an investment of Rs. 39.3 crores. On the basis of current yardsticks, additional output of foodgrains from these major irrigation schemes is expected to be 2.16 lakh tons. The Third Plan has allotted Rs. 11.23 crores for major irrigation. The balance of Rs. 28.1 crores will have to be invested during the Fourth Plan. These figures only indicate the rough order of magnitude and will have to be changed, if the cost estimates given in the Master Plan are revised after further investigation.

2.62 *Minor Irrigation*: A Minor Irrigation Team, which was appointed by the Committee on Plan projects has submitted its report on Kerala. This report reveals many interesting features regarding the scope for various types of scheme. Some of its important recommendations, which should be implemented expeditiously, are discussed below.

2.63 *Spring-fed Tanks*: There are a large number of spring-fed tanks in Kerala, but the tanks are exposed to dangers of silting, breaching by storm water and heavy evaporation losses. In order to obviate these difficulties, the streams should be tapped underground by means of open jointed pipe drains placed in a reverse filter, cutting across the springs, in preference to traditional tanks.

2.64 *Diversion Weirs and Channels*: Construction of such channels is feasible on a large scale as the Kerala rivers carry a good flow from May to February due to the two heavy monsoons. Moreover, waters from the hydro-projects, now being planned for construction in the mountains, could be diverted for irrigating the coastal plains by means of diversion works. Since most of the river beds are covered by paddy fields, any increase in the water level due to afflux above diversion weirs is resented by the people whose fields get submerged. Therefore, weirs with control gates ought to be provided.

2.65 *Lift Irrigation*: The topographical and other features of the State are eminently suited for the development of lift irrigation as there are a large number of small blocks of field located on the fringe of the rivers, spread all over the State. Another factor in favour of lift irrigation is the availability of cheap electric power. Implementation of an extended programme of lift irrigation would, therefore, be highly desirable even though the operational cost of these schemes is higher.

11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

2.66 *Surface Reservoirs*: Adequate provision should be made for silting capacity in tanks and reservoirs. In the case of small tanks at least about 20 per cent of the total capacity should be reserved for silting.

2.67 *Prevention of Ingress of Salt Water*: Large areas of cultivated land in Kerala are well below the mean sea level and are subject to flood by fresh water brought over by rivers in the monsoon season and salt water during other seasons. There is need for construction of suitable projects to prevent the onrush of salt water into the paddy fields. The scheme to dewater such areas should also form an important item in the minor irrigation programme.

2.68 No estimates are available for the likely area that could be irrigated from minor irrigation works. Nevertheless, it is considered to be quite substantial. It is learnt from discussions with the State Government authorities that the extent of such possibilities is around 300,000 acres. Of this, the share of lift irrigation and ground water utilization (wells, filter points, etc.) may be put at 100,000 acres. Lift irrigation and ground water utilization are works of a small size and, therefore, should be undertaken by the beneficiaries themselves with the help of Government aid.

2.69 In view of the emphasis laid on minor works, it is suggested that 200,000 acres of area (this also includes area benefited from flood control and drains) should be developed from minor irrigation sources. Of this, about half may be from lift irrigation and ground water sources. The average capital cost of providing minor irrigation would be in the neighbourhood of Rs. 1,000 per acre. Total investment for minor irrigation development schemes as suggested above would come to Rs. 20 crores. Of this Rs. 10 crores would be in the public sector and the rest will have to be provided by individual agriculturists.

2.70 The minor irrigation schemes proposed here would benefit not only rice, but also other crops such as arecanut, lemon grass and banana. For purpose of calculations it may be assumed that only half of proposed irrigation is used for rice. The additional production of rice on account of minor works would thus be about 50,000 tons annually by 1970-71.

Improved Agricultural Practices

2.71 Agricultural practices in Kerala are relatively of advanced type. Rice, the principal food crop of the State, is cultivated quite intensively. Transplanting is practised all over the State, even under the submerged type of cultivation. In case of dry seed bed crops like tapioca, ginger, groundnut, etc., the farmers generally take care to see that interculture and earthing operations are satisfactorily done.

2.72 However, there is further scope for increasing crop yields by improving the agricultural practices and techniques. Improved practices such as scientific crop rotation by including a legume crop as against the existing practice of successive rice crops, deep ploughing, adequate plant protection, etc., can increase the yields to some extent.

2.73 With the proposed increase in irrigated area it would be possible to raise a third crop of pulses either of black gram or green gram in succession to two crops

2.82 Against this, the total amount distributed through organized institutions in 1958-59, was only Rs. 2.49 crores. This leaves a large gap which is probably being met by money lenders who generally charge high interest rates. Since intensive agricultural development programme as suggested here would require large amounts of working capital for the various types of farm expenses, the need for expansion of rural credit facilities through organized institutions cannot be overstressed.

PLANTATION CROPS

2.82 The predominant place occupied by commercial plantation crops in Kerala's agriculture, both in terms of area covered and net value contributed, has been stressed previously. In view of their importance to the Kerala economy, they deserve a high priority in the development plans of the State. The plantation crops of Kerala include pepper, cardamom, arecanunt, coconut, rubber, coffee and tea. Since most of these crops are perennial and have a time lag of 5-7 years between the stage of plantation and crop maturity, their future development programme should be viewed on the basis of a long term perspective of 20-30 years. The extension of area under these would not result in any immediate increase in output. However, quicker increases in production are possible from existing area under these crops through increase in yields per acre by the adoption of better techniques, etc. There is considerable scope for improvement in the methods of cultivation. It is thus necessary to devise, both short term and long term programmes for development of plantation crops in the State which are discussed below separately for each cash crop.

Coconut

2.83 Coconut is the most important cash crop of Kerala. Natural conditions in this State are ideal for cultivation of coconut. The crop thrives well along the sea coast and in the interior up to an altitude of 1,500 feet. Kerala accounts for about 70 per cent of the area under coconut in India and for over 80 per cent of the copra and coconut oil produced in the country. Coconut is important to the Kerala economy in a number of ways. First, the outer husk goes to support the most important cottage industry of the State, viz., coir industry. The kernel is used for edible purposes and in addition it is the mainstay of a large number of coconut oil millers. Coconut oil, in turn, forms a raw material for the soap industry. Directly and indirectly this crop provides employment to over 5 lakh persons.

2.84 Coconut is not a regular plantation crop since it is not grown on large tracts as in the case of rubber, tea and coffee. It is grown in scattered patches along paddy fields, river banks, backwater stretches and in the compounds of residential houses. In view of these complexities it is difficult to estimate the precise area under coconut but rough estimates show that the area under coconut in Kerala is about 1.1 million acres. The district of Kozhikode has the highest (250,884 acres) and Palghat the lowest (11,556 acres) acreage.[1]

[1] The figures refer to 1958-59 crop year.

11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

2.85 The country is deficit in the output of coconuts and annually imports about Rs. 15 crores worth of copra and coconut products. This is a heavy drain on foreign exchange resources of the country. Even after imports the total available supply of coconuts is not enough and the oil millers are, therefore, hard hit by this shortage. The demand for this commodity is increasing year after year while the production has been more or less stagnant at 3,100 million nuts. If this situation is allowed to drift unchecked, imports of coconuts will have to be increased progressively. In view of these factors, measures to increase productivity and the output of coconut are of extreme urgency.

2.86 Coconut cultivation in the State today faces a multitude of problems. The average yields are only about 40 nuts a tree per annum, that is, 3,000 nuts an acre, as against 60 to 100 nuts per tree in Philippines and some of the other Far Eastern countries. Moreover, the yield has shown no tendency to increase over the last 10 years. The focal point of coconut development programme, therefore, should be to break through the stagnant levels of productivity of coconut. The following discussion follows this line of argument.

2.87 Poor yields are largely due to the absence of regular and adequate manuring. The crop needs large quantities of manure. But the farmers, majority of whom are poor, cannot afford to spend on fertilizers which in the case of coconuts show results only after two or three years. Farmers, therefore, prefer to invest whatever resources they have in manuring the field crops which bring in quicker returns. Coconuts thus get neglected. In addition to starving the coconut trees of fertilizers, many farmers grow exhaustive crops such as banana and tapioca as an understorey. This practice exhausts the soil and it needs large funds and a long period ranging from 3 to 5 years, to rehabilitate such gardens.

2.88 To raise the yields, an intensive application of fertilizers containing NPK has been recommended by the Indian Central Coconut Committee. The Committee is of the opinion that fertilizers are more suited to acidic soils on which coconut is generally grown in Kerala. It estimates the cost of requisite fertilizers to be of the order of Rs. 93 per acre per annum but that is beyond the means of a small farmer. It is, therefore, suggested that the State should arrange to advance loans for the purchase of fertilizers, and these loans may be recovered after three years. To start with, 30 per cent of the area may be brought under this programme. The annual requirement of fertilizers would be about 26,000 tons of superphosphate. The programme would cost Rs. 3 crores per year, that is, Rs. 9 crores for the first three years after which the loans may be granted out of the recoveries. The programme may be extended to cover 75 per cent of the area earmarked for coconut during the Fourth Plan. Better manuring coupled with the necessary cultural operations, can raise the yields from 40 nuts to 60 or 70 nuts per tree which would thus amount to an increase of 50 to 75 per cent over the present rate of production.

2.89 Coconut crop is subject to a heavy incidence of diseases and pests. The diseases such as "leaf rot" and "root diseases" are rampant and widespread and have spread to six districts affecting over 50 per cent of the trees in the State. The annual loss of production due to these diseases is estimated at Rs. 2 to 3 crores. There is already a scheme in force to spray about 7 million trees in the infected pockets.

11: India G-4, 5 (1960-1961) 1962 AWll Kerala AWll

But mere treatment of infected trees is not enough. The healthy trees lying side by side, or trees exposed to infection, should also be sprayed as a preventive measure. The proposed plant protection programme should cover the whole State in progressive stages by the end of the Fourth Plan. This would cost about Rs. 5 crores during the next 10 years, but a part of this may be recovered from the farmers as spraying charges.

2.90 Coconut is mostly grown as an unirrigated crop. During the summer months they are drought-affected in many parts of the State and drought has a telling effect on the trees. It is found that under irrigated conditions, the trees regularly give higher yields and there is very little premature shedding of buttons. It is, therefore, suggested that the Department of Agriculture should start popularizing irrigation of coconut gardens. Filter point tube-wells and pumping sets would be suitable as means of irrigation and the State should arrange for loans on easy terms for their installation.

2.91 The average economic life of a coconut tree is about 60 years. It is estimated that over 50 per cent of the trees in the State are over 50 years old and, therefore, in about 10 years, these trees would be past their economic life. Unless immediate steps are taken to replace the aged trees, the production of nuts after a few years is bound to decline in spite of all the measures suggested so far. A campaign should, therefore, be launched to replace old trees by fresh plantings.

2.92 There is not much scope for extending the area under coconut since most of the suitable area has already been brought under the crop. This is particularly so in the former Travancore-Cochin area. However, there is some possibility of raising new coconut plantations in the interior strip of Malabar along the foot of the western ghats. The Indian Central Coconut Committee estimates this area to be of the order of 100,000 acres. It is suggested that Government should make all efforts to bring this area under coconut cultivation. There are some difficulties in the way of bringing about the extension of area, for example, lack of adequate funds with the small farmers, and their preference for rubber plantations because they do not fall within the purview of the Land Ceiling Bill, etc. Some of these hurdles could be overcome if the State offers long term loans to intending farmers for the purpose of raising fresh plantations. Assuming that loans at the rate of Rs. 1,000 per acre are distributed, the total loan fund required to plant 100,000 acres during the next decade would be around Rs. 10 crores.

2.93. Production of quality seedlings from approved stock in large numbers is also necessary for the programme of under-planting and raising new plantations. The State nurseries, at present, have a capacity of 2.2 lakh seedlings a year. This capacity would not be enough to meet the future needs. It is suggested that the nursery capacity should be doubled during the Third Plan by starting 15 new Government nurseries. This would require an outlay of about Rs. 600,000 during the next two Plans. However, as even these would not be able to meet the anticipated demand, private nurseries may also be encouraged to produce quality seedlings in the different regions of Kerala. As a result of the improvements suggested above, the output of coconuts may be expected to double by 1970-71.

11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

therefore, does not look attractive to the growers. In addition, in some parts where rubber can be grown, cashew is being slowly replaced by rubber, the latter being more profitable. Under these circumstances, since there is no incentive for farmers either to resort to intensive methods of cultivation or to extend the area under cashewnuts, it may not be possible to achieve any significant increase in their output within Kerala. There may, however, be some scope in Cannanore district, for not more than 10,000 acres. Most of this area would be on Government lands under the jurisdiction of Forest and Land Revenue Departments. It is suggested that the proposed plantation should be from clonal progenies of selected parent trees.

2.143 Assuming that 10,000 acres of land is available for cashew planting, total investment necessary to plant this area during 1961–71, at the rate of Rs. 100 per acre, would be Rs. 10 lakhs. The major extension of area under cashewnuts, however, will have to take place in the other States of India, mainly, Andhra Pradesh, Madras and Orissa.

Arecanut

2.144 Arecanut is an important cash crop of Kerala. The State possesses about 50 per cent of total arecanut area in the country. Arecanut is a high value as well as a labour intensive crop.

2.145 The total production of arecanut in the country is about 25 lakh maunds, which falls short of requirements by about one-third. This is made good by imports from Pakistan, Malaya and other countries. The need for conserving foreign exchange resources of India brings out the importance of increasing the production of arecanut.

2.146 Short term as well as long term measures are necessary to raise the output of arecanut. Short term measures are needed to effect a quick increase in the production. Long term measures are necessary for sustaining the gains achieved through short term measures as well as for effecting a progressive increase in the output over a longer period. Adequate manuring, irrigation, and prevention and control of diseases are some of the short term measures, while under-planting or filling in and extending area under the crop are the long term measures.

2.147 Considerable scope exists for raising the output of arecanut by providing irrigation in summer months. It is found that some of the well-managed irrigated gardens yield over Rs. 6,000 worth of produce annually as against Rs. 700 to 800 in unirrigated gardens. At present about 50 per cent of the arecanut area is solely dependent on monsoon rains and only about 25 per cent of the area receives adequate irrigation. Provision of irrigation facilities to arecanut gardens is, therefore, a prime necessity. Since the crop is grown scattered in the valleys and in patches on hill slopes and on small holdings, the irrigation development so far has not benefited the arecanut area to any extent. It is, therefore, suggested that the State should aid arecanut farms by granting long term loans for sinking wells and for the purchase of pumping sets. The gardens being mostly small, it may not be possible for individual garden owners to fully utilize the well and the machinery. This difficulty may perhaps be surmounted by organizing irrigation cooperatives for arecanut gardens.

11: India G-4, 5 (1960-1961) 1962 AW11 Kerala AW11

2.148 Manuring of arecanut gardens is grossly inadequate in Kerala. It is found that when the gardens are adequately manured and intercultured, the yields are high and there is much less of premature shedding. A combination of chemical (NPK) and organic manures has been found to give the best results. However, since arecanut is a tree crop like coconut, the benefit of manuring would accrue only from the third year of application of fertilizers. Most of the farmers are reluctant to wait for such a long time. Only cheap long term loans for manuring could bring a favourable change in attitude. In addition, as in the case of coconuts, a systematic replanting programme is also desirable.

2.149 Knowledge regarding the scope for extension of area under arecanut is too meagre to hazard any accurate estimate of possible future planting. However, there is a feeling that the area can be increased by at least 50 per cent, most of which will be in the Malabar region. But irrigation facilities are a pre-requisite for any fresh planting. It is suggested that 25,000 acres of new areca plantations may be raised during the next 10 years. The investment required up to the bearing stage is about Rs. 1,500 per acre. Total investment on 25,000 acres of new plantation would, therefore, be Rs. 3.75 crores.

2.150 Care should, however, be taken to see that all new plantings are done with improved seedlings. In order to meet the increased seedling requirements, it is proposed that five more State nurseries, apart from the present five, should be started during the first half of the Third Plan. This would need an additional investment of about Rs. 125,000. The strength of private nurseries could also be increased from the present level of 120 to 300 by the end of the Third Plan. Development programme for arecanut can, however, succeed only if it is backed by an efficient plant protection drive since diseases and pests are very common in arecanut gardens.

CONCLUSIONS

2.151 The plantation sector, as a whole, faces a multitude of problems in Kerala. Some of them are specific for particular crops such as devastating diseases in the case of coconut, arecanut and pepper. But many of the problems arising on account of inadequate replantation and under-plantation, low yield rates, lack of funds with growers for replantation and new plantations, inadequate supplies of inputs especially of fertilizers, wide fluctuations in prices and export markets are common to all crops. The State and Central Governments as well as the respective commodity committees or Boards are earnestly taking appropriate measures to solve many of these difficulties. Measures such as the provision of technical guidance, long term and short term loans at easy terms for replanting and manuring, export promotion, market research, compulsory gardening, and supply of improved varieties of planting material, etc., have been in operation for quite some years. The effect of these efforts, however, has not been very significant owing to inadequate size of the programme. This is particularly so with regard to loans for planting, subsidies and fertilizer allocations. The State should help in procurement of the necessary credit facilities and fertilizers, especially those containing nitrogen. It is suggested that at least a minimum of 350,000 tons

11: India G-4,5 (1960-1961) 1962 AWII Kerala AWII

of fertilizers, 200,000 tons nitrogenous and 150,000 tons phosphatic should be allocated annually to plantation crops during the next decade.

Investment and Output Implications

2.152 It is not possible to give any exact figure for total investment needed to carry out the programmes suggested above, as a good deal of investment will be in the nature of improvement of land, better agricultural techniques and shift in cropping pattern, all of which would have to be effected by the individual farmers. However, some rough estimates have been attempted here separately for the field crops and the plantation crops. On the basis of the rough estimates made for individual crops, the total public investment during 1961–71 in the agricultural sector comes to Rs. 142.3 crores, out of which Rs. 50.6 crores will be for plantations. The total private investment suggested is Rs. 185 crores, out of which Rs. 129 crores will be for plantations, and Rs. 56 crores for the other crops. The latter figure has been worked out on the basis of the ratio of private investment to public sector investment in agriculture, as given in the Draft Outline of the Third Five Year Plan of India. Total investment in agricultural sector during the coming decade, therefore, adds up to Rs. 287.3 crores.[1]

2.153 It is even more hazardous to venture an estimate of additional returns from the proposed investment. It may, however, be broadly envisaged that as a result of the shift towards a more value-yielding cropping pattern as well as through increase in the physical yields and extension of area cultivable during the coming decade, the net value contributed by agricultural sector would rise by roughly 75 to 100 per cent.

2.154 The output of foodgrains is expected to increase by 16.28 lakh tons from the present level of 9 lakh tons during the coming decade. By 1960-61, the net value of agricultural output is expected to reach Rs. 174.3 crores (at 1955-56 prices). On the basis of an assumed increase of 75 to 100 per cent during 1961–71, the output from the agricultural sector at 1955-56 prices would be roughly Rs. 300-350 crores. Since the investment required for generating this increase in income has been estimated to be of the order of Rs. 327.3 crores, the marginal capital output ratio in agricultural sector during the coming decade would be between 1.9 to 2.3, depending upon actual, increase in the output of agricultural produce.

[1] The Third Five Year Plan of Kerala, as finally approved by the Planning Commission has allotted Rs. 48.2 crores to the agricultural programmes covering agricultural production, major and minor irrigation, soil conservation, cooperation, community development, panchayats, warehousing, etc. According to NCAER calculations total public sector investment during the coming decade is envisaged to be Rs. 142.3 crores, leaving a balance of Rs. 94 crores for the Fourth Plan. If the targets laid in this Report are to be achieved, investment effort in agricultural sector during the Fourth Plan will have to be considerably stepped up.

11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

urban households and this is due to better management. Scientific goat-rearing should be encouraged in the State by educating the people about the techniques and economics of goat-rearing. For the sake of convenience and better implementation, goat development may form a part of the Key Village Programme. This would effect saving in costs and also reduce the need for additional personnel. Through this programme, the local stock can be upgraded with the desirable outside milk breeds as Bikaner or Jamunpari after studying their performance and suitability.

Rearing of Pigs

3.22 Pig-rearing is not popular in Kerala, even though conditions such as climate and rainfall are favourable. The pig population has even fallen by 3.6 per cent during the period 1951–56. Piggery development did not receive any attention during the First and Second Plans and this, perhaps, is partly responsible for the decline of interest in pig-rearing in Kerala.

3.23 Pig-rearing needs to be encouraged in the State, as it is the quickest means of increasing meat production. But there has not been any research or studies on pig-rearing which could be applicable to the conditions prevailing in Kerala. It is suggested that the State should undertake research on these problems without any delay. In the meantime, this avocation may be developed on the lines suggested by the Department of Animal Husbandry for the Third Plan through the creation of piggery development blocks. In addition, the State should also provide certain facilities such as the supply of feed, provision of processing, grading, storage and marketing facilities and supply of credit on easy terms.

Supply of Feed

3.24 As a result of measures proposed for agricultural development, the production of cereals, pulses and oilseeds would increase by about 100 per cent during the next decade. Since livestock, especially the bovines, are fed on byproducts of agriculture (stalk, straw, husk, bran, etc.), the availability of basic feeds would also increase. Rice straw, the principal roughage in the State even may be surplus. Concentrates will, however, continue to be in deficit despite the large likely increase in the output of pulses and cereals. The situation of course, would change if oilcake, the byproduct of oil-crushing industry, is not allowed to move out of the State. This is a matter of all-India policy as the coconut-oilcake is an important item that is marketed outside the State in large quantities and is even exported. Assuming, therefore, that situation regarding oilcakes does not alter, the State should do the needful towards making concentrates easily available to the farmers. This deficiency could partly be reduced by supplying concentrates (ready-to-feed mixtures) in dehydrated form. Different ready-to-feed mixtures should be evolved for cattle, poultry and other livestock. The composition and formulae for such mixtures should be worked out on the basis of nutritional experiments. In anticipation of demand for the mixtures, it is suggested that three ready-to-feed mixture factories of 200,000 tons capacity each, may be started in the State during the Third Plan.

11: India · G-4, 5 (1960-1961) 1962 AW11 Kerala AW11

11.20 As a general rule one associates a high proportion of working force engaged in non-agricultural activities with a high level of industrial development. However, the structure of industries and income contributed by industries[1] do not bear out this contention. Moreover, the Census of 1951 shows that 75 per cent of the non-agricultural population lives in the rural areas. This only goes to prove that the major part of non-agricultural activity is not organized on the lines of modern large scale industry but is composed of occupations more allied to agriculture which are located in the rural areas.

11.21 Two factors, which have already been referred to in a different context,[2] seem to be responsible for this peculiar type of occupational structure. These are:

(i) *Predominance of Perennial Crops*: Over 40 per cent of gross cropped area is covered by these crops (all-India 10%). Since these crops, once they are sown, require comparatively little labour for looking after them, tend to reduce the proportion of working force to the population engaged in agricultural activities.

(ii) *Small Size of Holdings*: Super-imposed upon this is the fact that the average size of holdings in Kerala is very small. This tends to push people away from agricultural to non-agricultural avocations. Coir industry, which is mostly located in the rural areas, is an important example of such non-agricultural occupations.

Changes in Occupational Structure

11.22 Between the Census of 1931 and 1951 population dependent upon agriculture increased from 34.2 per cent to 53.84 per cent. It brings out one fact quite clearly. Although the non-agricultural sector is quite large in terms of its existing employment potential, it has not been dynamic enough to grow at a rate sufficiently large to absorb the growing population. One other consequence of a growing reliance on agriculture, in spite of the congestion already existing there, is the rising proportion of agricultural labourers to total population. Cultivation of owned land cannot be expected to provide a reasonable source of livelihood for all the rural population, when as high as 50 per cent of family holdings are less than one acre in size. The proportion of agricultural labourers to total population, therefore, increased from 12.5 per cent in 1931 to 20.16 per cent in 1951.

PART II: PROSPECTS OF EMPLOYMENT

LABOUR FORCE AND UNEMPLOYMENT

11.23 Some indication has already been given of the high degree of unemployment prevailing in the economy of Kerala. Before proceeding to make a quantitative assessment of the extent of unemployment, it is desirable to clarify the definition of

[1] Chapter 9, Industries— Structure and Growth.
[2] Chapter 1 and Chapter 2.

11: India . G-4, 5 (1960-1961) 1962 AW11 Kerala AW11

TABLE 9

VALUE YIELDED PER ACRE

241
435

Name of commodity	*Percentage value contributed*	*Percentage of gross cropped area occupied*	*Average value of produce per acre (in Rs.) (1956)*
Paddy	23.0	35.8	211.9[a]
Pulses	0.2	2.3	33.0
Tapioca	4.3	10.2	140.0
Banana	4.7	2.1	732.8
Sugarcane	0.7	0.3	722.2
Pepper	4.0	3.9	331.7
Ginger	1.6	0.4	1077.0
Cardamom	1.7	1.3	434.8
Arecanut	5.5	2.6	687.5
Cashewnut	2.1	1.7	408.6
Coconut	27.5	20.2	446.2
Groundnut	0.5	0.6	242.4
Rubber	5.8	2.9	425.0
Coffee	0.9	0.8	390.2
Tea	7.9	1.5	1434.3
Others	11.8	13.2	294.0
	100	*100*	*Gross Average = Rs. 327*

TOTAL GROSS VALUE = Rs. 180 crores. TOTAL CROPPED AREA = 5466 thousand acres.

[a] Figures given in this column are average values produced per acre gross of costs of cultivation and hence are not comparable with the net average of Rs. 361 per acre mentioned previously.

11: India G-4, 5 (1960-1961) 1962 AWll Kerala AWll

241
433

TABLE 10

AREA AND PRODUCTION OF PRINCIPAL CROPS IN KERALA
(1950-51[a] AND 1958-59[b])

	Area under crops ('000 acres)		Percentage increase or decrease	Production of crops ('000 tons)		Percentage increase or decrease
	1950-51	1958-59		1950-51	1958-59	
Rice	1,901	1,894	— 0.36	715	939	+ 31.3
Jowar	6	4	— 33.3	3	7	+ 133.3
Ragi	11	12	+ 9.1	5	7	+ 40
Other millets	30	14	— 53.3	3	2	— 33.3
Total cereals	1,948	1,924	— 1.2	726	954	+ 31.4
Tur	7	21	+ 200	1	4	+ 300
Other pulses	23	89	+ 286.9	1	13	+1200
Total pulses	30	110	+ 266.6	2	17	+ 750
Cereals & pulses	1,978	2,034	+ 2.8	728	971	+ 33.3
Sugarcane	2	21	+ 950	4	35	+ 775
Ginger	30	22	— 26.7	10	7	— 30
Chillies	8	8		2	2	
Tobacco		1			..	
Groundnuts	28	33	+ 17.8	14	15	+ 7.1
Sesamum	8	50	+ 525	1	5	+ 400
Total oilseeds	56	83	+ 130.5	15	20	+ 33.3
Cotton	18	21	+ 16.6	6	7	+ 16.6
Tapioca	506	553	+ 11	1,500	1,569	+ 4.6
Total field crops	2,578	2,718	+ 5.4	2,265	2,869	+ 26.6
Black pepper	173	224	+ 29.5	18	24	+ 33.3
Cardamom	63	69	+ 9.5	1	1	
Rubber	132	246	+ 86.3	12,998	22,158	+ 70.4
Tea	92	98	+ 6.5	24,514	39,737	+ 62.0
Coffee	28	41	+ 46.4	2,951	6,961	+ 135.8

[113]

[a] *Agricultural Statistics of Reorganised States (1956)*, Government of India.
[b] Agricultural Department, Kerala.

11: India · G-4, 5 (1960-1961) 1962 · AWll Kerala AWll

TABLE 11

PER ACRE YIELDS OF PRINCIPAL CROPS IN KERALA

241
4.23

Crops	Yields Per Acre (Lbs.)		
	1950-51	1958-59	Per cent (+)/(—)
1	2	3	4
1. Rice	829	1,108	+ 33.6
2. Jowar	1,120	560	— 50.0
3. Ragi	1,008	1,307	+ 30.0
4. Small Millets	224	448	+ 100.0
5. Total Cereals	829	1,008	+ 21.5
6. Tur	314	1,403	+ 28.3
7. Other Pulses	90	336	+ 273.3
8. Total Pulses	157	358	+ 128.0
9. Cereals and Pulses	896	963	+ 7.5
10. Sugarcane	4,480	35,616	+ 695.0
11. Ginger	739	806	+ 9.1
12. Chillies	..	..	..
13. Tobacco	..	..	..
14. Groundnuts	1,120	1,008	— 10.0
15. Sesamum	291	269	— 7.6
16. Total Oilseeds	918	582	— 36.6
17. Cotton	131	157	+ 19.8
18. Tapioca	6,640	6,352	— 4.3
19. Total Field Crops			
20. Black Pepper	224	246	+ 9.8
21. Cardamom			
22. Rubber	221	273	+ 23.5
23. Tea	597	791	+ 32.7
24. Coffee	238	407	+ 72.3

11: India G-4, 5 (1960-1961) 1962 AWII Kerala AWII

241
312

TABLE 12

AREA IRRIGATED ACCORDING TO SOURCES

(In '000 acres)

Source	1960-61	Per cent to total	1956-57	Per cent to total	Per cent (+)/(—) (3)/(1)
1	2	3	4	5	6
Government Canals	321	43.15	343	41.38	+ 6.8
Private Canals	68	9.14	71	8.57	+ 4.4
Total Canals	*389*	*52.29*	*414*	*49.96*	*+ 6.4*
Tanks	82	11.03	77	9.28	— 6.1
Wells	26	3.49	29	3.49	+11.5
Other sources	247	33.19	309	37.28	+25.1
TOTAL	*744*	*100.00*	*829*	*100.00*	*+11.4*

TABLE 13

249
433

AREA AND PRODUCTION OF RUBBER IN KERALA

Year	No. of estates on 31st December	Area abandoned during the year (In acres)	New extension during the year including re-planting included in areas abandoned in the previous year	Total area under rubber during the year (In acres)	Area that has been tapped during the year (In acres)	Quantity of dry rubber produced (Tons)
1951	9,026	1,856	4,386	141,738	99,078	13,800
1952	9,186	2,130	3,819	143,448	103,762	15,568
1953	14,231	1,489	1,555	143,254	143,263	19,430
1954	14,336	460	1,769	143,834	17,711	18,768
1955	14,386	2,386	4,963	168,412	132,831	21,605
1956	18,082	4,381	13,785	177,826	150,005	21,079
1957	43,783	4,230	31,699	246,795	167,421	21,496
1958	5,005	2,726	26,558	270,625	169,492	22,159

12:Peter E-5 (1939, 1949) 1963 AWll Kerala AWll

Ghats, the height of which varies between five and over eight thousand feet.

Before 1957, when the new State of Kerala came into being with the reorganization of the Indian States, the area included the large Madras district of Malabar, the French possession of Mahe, and the princely State of Cochin amalgamated with that of Travancore. The respective capitals were Calicut (today Kozhikode), Ernakulam, and Trivandrum, the French possession being limited to the town bearing the same name as itself.

All rivers in Kerala, except those of the more elevated taluk of the Wynaad, run from east to west, cutting the coastal strip into sections. Inland, however, vast stretches of practically stagnant water, comparable to lagoons, known locally under the name of backwaters, extend down the whole length of the State, affording uninterrupted communication.

Geologically, Kerala is a low tableland of red laterite and clay, fringed by a coast of alluvial formation. Laterite, from the name given to it by Dr Buchanan in 1800, is really a soil of decomposed gneiss, from which the Western Ghats are made. When dug up and left to the action of sun and rain, only the skeleton of hard material remains, sponge-like in appearance, from which blocks of building material are cut. It is not very resistant or long-lived, and gradually disintegrates into a red type of gravel, more or less finely granulated.

The resultant soil or loam is a well-balanced mixture of clay and sand, admittedly poor in organic matter, but well-suited to the special types of crops which have given Kerala its wealth. Thus rice, coconuts, pepper and betel, arecanuts, jack fruits, mangoes and cashews, do extraordinarily well in it, helped as they are by the damp, warm climate constant throughout the year. There are two monsoons in Kerala, the south-west monsoon of the summer, which is the principal one, and the north-west monsoon of the autumn which, lately, often fails.

In appearance, the landscape of Kerala varies very little from the coastal line to the towering peaks of the Western Ghats. Along the beach of fine sand, coconut trees in an unending perspective, raise their gently waving palm leaves in a manner reminiscent of the South Seas and of Ceylon. Jack fruit trees and mangoes behind them, being of a darker coloured foliage, give depth to the romantic scene. It is among these that the houses of the inhabitants of Kerala are to be found. Unlike the rest of India, human habitations are not grouped together here in villages and towns. Each stands isolated from its neighbours, in a garden-like compound surrounded by a stout fence of brambles or of

12:Peter E-5 (1939, 1949)1963 AWll Kerala AWll

thorns and planted with big-leaved plantains, flowering bushes such as the hibiscus, and tall, slender arecanut palms, their graceful, shining trunks entwined with betel and pepper creepers. Here and there, a red tiled roof denotes the dwelling of some high-caste person, while elsewhere, the thatched roofs of the ordinary houses reveal the low social status of the majority.

Red laterite dust roads criss-cross this green scenery, highways and lesser paths upon which a continual stream of men and women, scantily clad in white, are forever on the move. Dry river beds in the spring and swollen, muddy torrents in the monsoon season, are crossed together with the broad expanse of calm, smooth backwaters on the way east to the inland red laterite hills. It is here that the majority of the terraced paddy fields are met with, green and flooded in the summer and dried up, with tufts of yellow straw stalks the rest of the year, their fringes strewn with rustling, restless coconut trees.

2. MYTHOLOGICAL BACKGROUND AND HISTORY

Hindu Brahmin tradition has it, so I heard from my informants in this region, that Kerala (*Malayalam* or *Keralabhumi* as it is called in the *Keralolpatti* and *Kerala Mahatmyam* chronicles) was created from the sea by Parasu Raman, the axe-wielding avatar of the god Vishnu, and given to those Brahmins called Nambudri for their perpetual possession and enjoyment. The myth, to which even the modern Hindu inhabitants of Kerala subscribe, is no doubt symbolic of two things: the geological origin of the land at the foot of the Ghats, which appears really to have been uncovered from the sea in some ancient natural upheaval, and the colonization of Kerala by Aryan invaders from the north in a remote and ill-defined past.

The mythological tale, in detail, is that Parasu Raman was once ordered by his father to kill his mother, because the latter had been seen by her husband smiling at a youth when she was fetching water at the well. The son, in filial obedience to his father, carried out the order, but having done so, attempted in every possible way to atone for the abominable crime of matricide. He consulted Brahmins who requested of him that he exterminate twenty two generations of the rival warrior caste of Kshattryas. This he did, but the Brahmins were not satisfied. Parasu Raman then climbed the Western Ghats and, from the highest point, cast his axe into the sea calling upon it to withdraw, which it did. The land of Kerala thus came into existence and Vishnu's avatar, the

12:Peter E-5 (1939, 1949) 1963 AWll Kerala AWll

105 588 Without going into the elaborate details of the occasion – which are very different, depending on the caste to which the girl belongs – it is enough to mention that its main item is the tying of the *tali* round the child's neck by someone who is, usually, a substitute bridegroom or *manavalan*. He should be of a higher or at least of the same caste, but he can also be an old, venerable person who has already done this, for instance, to the mother; sometimes the father takes the place of the *manavalan*, at others, it is the maternal uncle. That the mother herself should do so, is not unknown, and cases in which a clay figure has taken the place of a live person are on record. It has also become increasingly the custom to tie the *tali* on many girls at the same time (to save expense), and the tendency is to do the ceremony earlier and earlier in the children's lives.

After the man who ties the *tali* has fulfilled his task, he is not entitled to touch the girl. But shades of the times when he perhaps did do so still exist in the practice of his attempting to force the girl's bedchamber door, and of his being pelted by male onlookers belonging to her kin group, which does take place in some of the lower castes. In south Malabar, he is supposed to lie down under the same blanket with the girl for a few moments; among the Ambalavasis, and in some of the sub-castes, he may even spend three nights with her, but under the strict supervision of a chaperon put there to see that he does not touch her. In some cases, a form of divorce ends the ceremony before the *manavalan* is allowed to go. *Tali* tying is universal in Kerala, where it is not limited to the Hindus only, but is also practised by the Moslem Moplas and the Christians.

[184]

105 581 588 833 [183] It is interesting to note that the Portuguese traveller of the beginning of the sixteenth century, Duarte Barbosa, mentions that before a Nayar girl can be married, afer the *tali* has been tied on her, she should be deflowered before puberty, by some young man called in specially to do this from outside the caste, "for amongst themselves they hold it an unclean thing and almost a disgrace to deflower women" (*The Coasts of East Africa and Malabar*, p. 124).

4. LAND-TENURE

105 ● 241 Kerala is an agricultural state and everyone in it is either dependant on the produce of the land or linked to it by serving those who till the soil. The main crops are rice, coconuts, pepper and arecanuts, in that order of importance. Others, less important, are pulses, tapioca, spices such

12:Peter E-5 (1939, 1949)1963 AWll Kerala AWll

as ginger and chillies, palm sugar, mangoes and bananas, betel leaf, tea and coffee. There are two main paddy (unhusked rice) harvests, the *kanni* in September and until November, depending on the type of rice planted and where, and the *magaram* in January and February.

A system of land-tenure and tenancy very special to Kerala is in existence in the state and its principal characteristics may be summed up as follows. Freehold land owners are called *janmis* and they are entitled to the absolute proprietorship of the land; they may mortgage or lease it to anyone as they wish. They are themselves nearly always non-cultivating. The first kind of tenure to which they may resort is called *kanam* and he who holds the lease is known as the *kanamdar*. This is a curious type of arrangement between landlord and tenant, by which the latter deposits a certain sum with the *janmi*, who in return pays interest on the amount as if it were a loan. The *kanamdar* then has the right to work the land or to lease it out to someone else. Every year he pays rent, an adjusted sum as the interest received from the landlord is deducted. Once every twelve years, a so-called renewal fee is paid by the tenant equal to three times the annual rent, and this gives him the right of possession for a further twelve years. Should he wish to give up the lease, the original deposit will be returned to him by the *janmi*. Most *kanamdars* sub-let and do not cultivate the land themselves.

The *kanamdars* often lease out the land as a *kanam* tenure too; but if they do not, it is as a *verumpattam* lease that they do so. This is a simple affair held for one year at a time, by which the tenant pays a fixed rent, or for several years, in which case it is called a customary *verumpattam*, and a renewal fee then becomes necessary, payable between five and twelve years. This lease is used only for paddy fields. Tenants of this category often sub-lease in the same way to others, who cultivate the land either themselves, or, more usually, employ labourers to do so. These labourers are of two kinds, free and tied. The former are coolies hiring themselves out for wages, while the others are agrarian farmhands who receive only board, lodging and clothing from the master responsible for them.

Customary *verumpattam* tenure of palm gardens for the production of coconuts or arecanuts is called *kuzhikanam*. The twelve year renewal fee is equal to the amount made on the garden in the last year and a half of the lease. Virgin and waste land, which nevertheless always has a *janmi* somewhere, is also let out on this type of tenure. The land owner has the right to evict the tenant if he has made no improvement of the land during his period of lease. House-sites occupied by tenants

12:Peter E-5 (1939, 1949) 1963 AWll Kerala AWll
Kammalahs

*595 564 [361] the cross-roads of the main Shoranur-Palghat highway of the road to Lakkidi, a few furlongs down the latter, on the right hand side. In contrast to the Thandan houses to which we had been, although not to the Tiya (Thiyya) houses of the Cochin labourers, the place looked rather [342] miserable. It was a thatched palm-leaf house, standing on a red laterite loam platform, in the middle of some paddy fields. There were signs [241] about that these Tathans were not only goldsmiths but that they now [231] also practised agriculture. There was paddy lying about to dry in heaps in the yard, and there were stalls for bullocks at the back.

*595 [601] We interviewed a man called Raman and his brother Kochen, aged fifty four and fifty two respectively, who lived polyandrously with their wife, Kurumba, forty five years old. They seemed rather impressed by [574] us, and were reluctant to speak. They observed the outward forms of hospitality, however, and presented us with fresh coconuts for us to drink the milk.

Raman told us that the household's name was Padijarehil, meaning "Western", and that it was part of five others which constituted the [611] Uzhugaparekil *tarawad*. The latter was *makkathayam*, as we expected, [614] and exogamous, as was also their *kiriyam*, although, here too, they only observed the rule in matters which concerned those members of it whom they knew. They had two and a half acres of paddy fields, in simple *595 427 293 *verumpattam* lease from a Nambudri Brahmin janmi called Kodiertha-mana. For this they paid five rupees a year and handed in a part of the harvest – five hundred *parahs*, I have in my notes, three hundred from the *kanni* crop and two hundred from the *magaram*.[1] As it was an ordinary *verumpattam*, there was no renewal fee. They had a deficit this year of forty *parahs* (roughly lbs. 866⅓) and they were wondering what they could do to make it good. Last year they had done "other work" [464] (presumably such as hiring themselves out as labourers) in order to raise the cash needed to compensate for the deficiency in grain, and they might do the same thing now. When I asked them what kind of *595 [326] goldsmith's work they did, they laughed and said that they had given [936] this up; how could they carry on with their traditional profession, they asked, when the sovereign which was once worth Rs. 25 had reached Rs. 77?

[601] Raman and Kochen had had eleven children in their polyandrous

[1] This again seems too much. It is equivalent to lbs. 10,830 (1 Palghat *parah* = 10 *edengalis* = 40 *nalis* (1 *nali* = *tolas* 21⅛ in s. Walluvanad and Palghat) = 866,40 *tolas*; as 40 *tolas* = 1 lb. in s. Malabar, 1 *parah* = 866,40 : 40 = 21⅛ lbs and 500 = lbs 10,830). [804]

13:Thurston & Rangachari E-4, 5 (no date) 1909
AW11 Kerala AW11
Nayar

seems to have been reserved specially for them. It would be well worth the study of persons acquainted with other districts of the Presidency to ascertain whether somewhat similar functions to these (protection and supervision) did not originally appertain to the Kāvalgars of Tamil districts and the Kāpus in the Telugu country, for both of these words seem to have come from the same root as the Malayālam kānam. And it is significant that the Tamil word now used for proprietorship in the soil is kāni-yātchi, to which word the late Mr. F. W. Ellis in his paper on Mirasi Rights assigned a similar derivation." 631

The occupation of the Nāyars is described by Mr. N. Subramani Aiyar as "comprising all kinds of worldly pursuits. So late as the end of the eighteenth century, there were with the then Mahārāja of Travancore a hundred thousand soldiers, consisting of Nāyars and Chovas, armed with arrows, spears, swords and battle-axes. The chief occupation of the Nāyars is agriculture. Cultivation of a slipshod, time-honoured type is the forte of the Nāyar, for which he has always found time from times of old, though engaged in other occupations as well. In the Velakali, a kind of mock fight, which is one of the items of the utasom programme in every important temple in Malabar, the dress worn by the Nāyars is supposed to be their ancient military costume. Even now, among the Nāyars who form the Mahārāja's own Brigade, agriculture, to which they are enabled to attend during all their off-duty days, goes largely to supplement their monthly pay. Various other occupations, all equally necessary for society, have been, according to the Kēralavakasakrama, assigned to the Nāyars, and would seem to have determined their original sub-divisions. They are domestic servants in Brāhman 463 [701] [24] [526] [292] [241] [357]

6:Spate N-4 (no date)1954 AWl India
Kerala AWII

below 70°, the annual range at Cochin is only 6° and the diurnal is about 10°. Apart from the high falls (180 ins. plus) in the hills, rainfall decreases from N to S (Calicut 119, Trivandrum 64 ins.) and the extreme S, around Comorin, falls below 40: here alone are there major irrigation works. But this decrease is balanced by a better seasonal distribution in the S: Trivandrum has 24·85 ins. in June–August, 21·32 in September–November, and 18·23 in December–May—28% in what is an almost completely dry season in nearly all the rest of the sub-continent.

Kerala as a whole (including the hills) has an area of about 15,500 sq mls, of which some 20% (mainly on the Travancore hills and foothills) is forested and 45% NSA. The TSA is about 15–20% greater than NSA in Cochin and Malabar. The question of 'culturable waste' is, as usual, difficult; but it seems that in the alluvial and lateritic zones respectively about 75–80 and 65–70% of the total area, or 90 and 80% of the 'cultivable', are in fact cultivated.[44] It is clear that what is left will be marginal and that there is very little room for expansion.

Rice is dominant, occupying about 260,000 out of a TSA of 550,000 cropped ac. in Cochin, 860,000 out of 1,790,000 in Malabar, but only 655,000 out of 2,200,000 in Travancore. The area under rubber, tea, and pepper in the Travancore hills accounts for this in part; but in Cochin and Malabar a good deal of rice is grown on the lateritic hills after burning the jungle; the heavier rainfall has probably a bearing on this. The local variations in cropping, analysed in detail in Kuriyan's 1942 paper, deserve summarising:

(i) In the extreme S rice is grown by canal- and in Shencottah taluk (E of the hills and really outside the region) by tank-irrigation. With intensive watering and careful transplanting crops can be obtained both in September–October and in February–March. In Chittur taluk—the Cochin outlier in Palghat—there is also a little irrigation by *anicuts* or weirs feeding canals, and here cotton and groundnuts are grown. These three areas are strongly influenced by Tamil methods.

(ii) Along the backwaters (*punja* and *cole* areas) the problem is not to get water on the land but to get it off. These areas are divided into blocks of up to 50 (exceptionally 100) ac., bounded by double dykes enclosing a channel. From July to September–October the ground is submerged, sometimes to a depth of several feet; after the rains the water is lifted into the bounding channels by Persian wheels; latterly oil-driven and still more recently electric pumps powered from Pallivasal have been introduced. The land lies three or four feet below the water-level in the channels, and sluices regulate various inundations during the growing season. Should the bunds be burst the half-drowned crop may be reaped from boats by cutting off the heads.

(iii) Along the backwaters on the Cochin-Malabar boundary the soil on areas liable to salt-water inundation is heaped up into mounds about one foot

[44] Kuriyan (1938), 133; (1942).

6:Spate N-4 (no date)1954 AWI India
Kerala AWII

high and five feet round, on which the paddy is sown just before the rains. When the monsoon bursts the surrounding water is freshened and transplanting takes place. This is a rather precarious method, illustrating the devices enforced by severe population pressure.

(iv) In the wet lowlands above the backwaters more normal methods prevail, but the early onset of the rains enables planting to take place in April–May and harvest in September; the continuance of the rains then often permits a poor second crop (not necessarily paddy) harvested in January; very occasionally a third is possible.

After rice, coconut is the chief crop, accounting for nearly 1 m. ac., typically, of course, in the sandy coastal strip but also on alluvial loams and (with more careful preparation) on laterites. In Travancore the coconut acreage is nearly equal to that of rice; in Quilon taluk, indeed, it covers 85% of cropped area. After rice as the essential food, the coconut palm is the basis of life in Kerala: "Apart from the several uses of the chief products, viz., coir, copra, coconut oil, oil-cake, the hollowed trunk serves as a canoe, the nut forms a staple article of diet, the leaves may be used for many of the purposes of paper, are frequently employed as thatch and for the manufacture of brooms, baskets, umbrellas, tattis [screens kept soaked to cool rooms], and fans, and utilised as crude torches in a dried form, or burnt as fuel, as it is [*sic*] or in the form of charcoal. In addition, the fresh or fermented juice of the stem is consumed as a beverage, by evaporation it is made into jaggery and by subsequent treatment even sugar is obtainable. When distilled, the toddy becomes arrack and finally vinegar."[45] Of the "industrial" workers of Kerala—most of them, of course, cottage workers—about a third are in various processes connected with coconut products, and of these two-thirds are women. The coir 'yarn' is almost entirely cottage-produced, its working-up into mats and so on largely a small factory industry.

The most important other crops (apart from plantation rubber and tea in the hills), are cassava (tapioca) and pepper, mainly in the foothills. The former is grown as a food crop on poorer lateritic soils; pepper is perhaps the chief peasant-produced cash crop after coconut. Cereals other than paddy are negligible, as are oilseeds except for a little sesamum (gingelly), often as a third crop on the higher wet-rice lands. Nearly every homestead has its plantains and other fruit trees, and ginger and the betel vine, with its associated areca palm, are also grown widely but in tiny patches.

Tapioca deserves special mention. Introduced about 1920, it is grown on the lateritic soils ("about as attractive for agriculture as railway ballast") in tiny holdings by the poorest of the poor. As Gourou points out, there is a sort of social inversion: the better-off rice farmers in the valley-bottoms, and a hundred feet or so above them a very wretched (largely Christian) peasantry.

[45] Quoted in Kuriyan, 1937 (Vol. XI), 286. Cf. P. K. Paniker, "The Coconut—its Cultivation on the Malabar Coast", *JGJ* XVIII (1943), 78–88.

6:Spate N-4 (no date)1954 AWI India
Tamil AW16
Kerala AW11

atypical. Much of it indeed revolves around the hill-station of Ootacamund, lying under the highest point of the plateau, Dodabetta (8760 ft). 'Ooty' and its satellites Wellington and Coonor have the usual hills layout of straggling bungalows; they are reached by a metre-gauge rack-railway with gradients of 1 in 12½. There is a little local industry of the kind associated with resort functions: breweries (now presumably under a cloud), sodawater factories, and so on; tea, quinine, and eucalyptus oil are processed, and at Wellington the Government cordite factory had one of the earliest hydro-electric installations in India. Of much greater importance is the power station at Pykara Falls, with an installed capacity of 38,750 kW; large extensions are planned, and in addition the utilisation of the Pykara tail-water over a 1200-ft drop in the Moyar Valley, to produce another 36,000 kW, forming a new link with Mettur. This is in the future; but already the leisure resort of S India has become one of the most vital nodes in its workaday life.

(b) *The Anaimalais, Palnis, and Cardamoms*

This remarkable group of hills (Figs. 121, 150) is more complex than the Nilgiris, and in Anaimudi itself they have the highest peak of the Peninsula, 8841 ft. The front to the Palghat Gap is remarkably steep and in the E remarkably straight; the SE flanks of the Palnis, overlooking the upper Vaigai re-entrant, are also remarkably abrupt, as are the Cardamoms and their protrusions (Varushanad Hills) S of the Vaigai. But to the NW the hills fray out into long SE–NW ridges; and indeed over much of the area this trend is most marked, the rivers (e.g. the Periyar) having longitudinal stretches of such straightness as to suggest control by faults, with transverse gorges producing a perfect trellis-pattern. Between 10° N and the Shencottah Gap the active streams of the exposed Arabian Sea front have pushed the watershed back to within 4 or 5 miles of the En edge of the hills: here the change from jungle-clad mountains to the tank-pitted Tamilnad Plain is very sudden (Fig. 150).

Again, apart from the shifting cultivation of tribes some of whom (e.g. Cochin Kadars) are hardly more than hunters and gatherers, the economy is atypical: forests, plantations, hydro-electricity. The most exploited forests, served by special light railways, are in the NW, the Cochin slopes of the Anaimalais. As for plantations, these are not confined to the Wn flanks but are more numerous there, where there is a broader plateau development than on the E. A little coffee and tea are grown in Cochin and in Madura Dt (Madras), but the major share of the plantations (78,000 ac. tea, *c.* 6000 coffee) is in Travancore, which is also by far the most important rubber-producing area of India, with nearly 100,000 ac. bearing against 13,000 in Malabar and 10,000 in Cochin (1945). It is grown on the lower slopes generally below 1000 and never above 2000 ft, with 80–120 ins.

6:Spate N-4 (no date)1954 AW1 India
Kerala AW11
Tamil AW16
Marathi AW12

K T 241 311

rain. Above the rubber, tea extends to nearly 6000 ft, and indeed more than half of it is grown above 4000 ft; rainfall is usually 100–150 ins. It is noteworthy that over half the rubber is produced on Indian-owned estates, but only a small fraction of the tea.

K T 377

As for hydro-electricity, the hills are dotted with falls and rainfall on the Wn flanks is everywhere high and reliable. So far the most important large development is at Pallivasal in Travancore (installed 21,000 kW, potential 36,000), which powers the aluminium smelters at Alwaye and also works pumps draining the flooded paddy-fields of Kerala. A project of great interest is that for utilising the great Periyar Reservoir (Fig. 150) for power. The Periyar headwaters have been impounded and are taken through the watershed by tunnel to irrigate the Suruli-Vaigai Valley in Madura; some 40,000 kW might be developed, and altogether the region has a potential of at least 200,000 kW.

K T 211 361

The Wn flanks of the hills are too rain-swept to have much settlement except on plantations, forest camps, and power installations. In the E Kodaikanal, lying at 7000 ft on the Palnis, is a minor hill-station, noted for its mission schools and an old-established physical observatory.

Maharashtra

M 133

Maharashtra, the Maratha country *par excellence*,[5] may be taken as roughly coterminous with the main mass of the Deccan Lavas above the Ghats. To the N the Tapti Valley, flanked by typical lava plateaus but floored by alluvium, forms a transition to the central Indian scarplands; in the S, along the Malaprabha, there is another belt where Archaeans and lavas interdigitate and where cultural allegiance is divided between the Marathi and Kannada (Kanarese) languages. But to the E, in Hyderabad especially, the boundary of Marathi speech shows a striking accordance with the edge of the Lavas (Fig. 127); hence the division of the state into Marathwara and Telangana, a rare instance of official recognition of regionalism. This great area thus includes all central Bombay, the NW third of Hyderabad, and SW Madhya Pradesh (CP) as far as Nagpur.

The Terrain

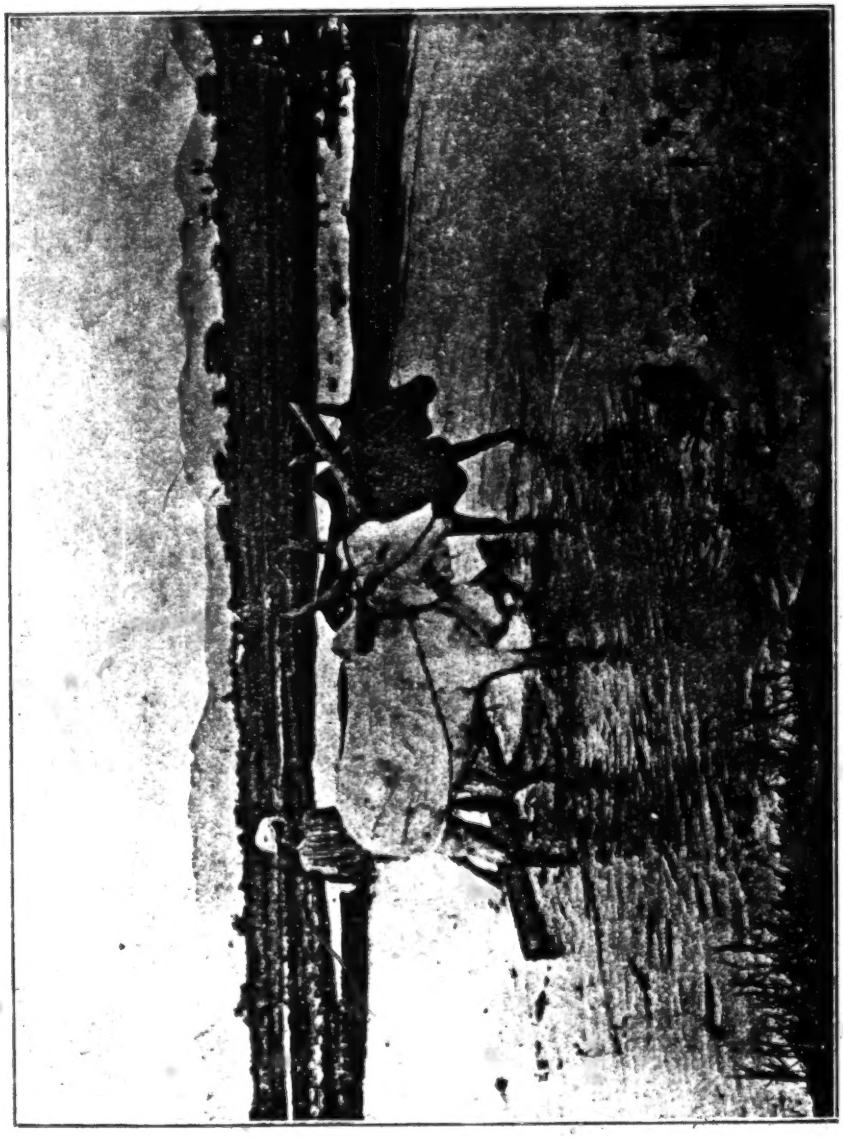
M 133

It is a region of extraordinary physical homogeneity, in the gross at least, although (as Deshpande points out) detailed study would undoubtedly reveal significant differences in erosional features, soils, vegetation, and farming practice depending on the varying petrology of the lavas. The general slope to the E and SE is gentle: Poona lies at 1800 ft, and it is over 100 miles down the Bhima to the 1500-ft contour. From the Ghat culminations long tongues of higher ground (over 2000 ft) run E and divide the plateau

[5] The etymological connection of Maratha or Mahratta and Maharashtra, if any, is still controversial.

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

231
241



LEVELLING BOARD AT WORK. Photo by Agricultural College.

[facing page 130]

234 [804] castes very rarely use these products. The cows too are not brought up on a scientific basis, and are consequently of a weak build and generally yield from 4 nalis * to 6 or 8 nalis of milk per day.†

Male buffaloes are used in ploughing and sometimes to draw loaded carts. These too are of weak build.

Cow buffaloes are used mostly for milking, but sometimes in ploughing. The milk they yield is greater in quantity but inferior in quality to that of the cows.‡

231 Very little care is taken of the young of the above species. The young calf or calf-buffalo is not usually reared with the object of getting strong or vigorous oxen or buffaloes, but allowed to grow haphazardly. Some die off young, and especially the buffalo-calf since the buffalo can be milked without its young and not so the cows.§ The official figures in this respect (vide above) are instructive. The usual practice is to buy cows or buffaloes from a fair for milking purposes and to dispose of them, buffaloes especially, unless needed for ploughing, when the milk dries up.

The only use to which the horse is put is to drive jutkas, but as jutkas are rare in this village, horses are seldom seen here.

Donkeys and mules too are few.

Sheep and goats are used for their mutton which is in demand among the lower castes, but more for their milk, which is considered to be medicinal.

Pigs are reared for their flesh by the local Christians; the Muhammadans consider it to be a sacrilege even to utter the name.

Cows, oxen and buffaloes are made to stand in stalls, two or more being allowed to be in the same stall. Bundles of rice straw form the chief food, but green grass is used during the rainy season. Rice dust and poonac (copra from which the oil has been extracted) mixed in water is given. Cows are let loose during the daytime under care of a keeper to feed in the fields or near the hills.

241 237 Cattle-dung mixed with cattle urine is used as manure in the paddy fields. This is scattered in the fields during the hot season (April-May). The percentage of cattle-dung will approximately be 25 per cent of the total manure used. Dung is also used as fuel. Women are becoming averse to making varatties and use more wood.

Sheep dung is sometimes used.

241 But green manure consisting of leaves of certain plants and trees is scattered in the fields after they have been well ploughed in the first fall of the monsoon rains. Green manure is never grown, but is obtained from the neighbouring hills.

351 Every house without exception has a compound big or small surrounding it in which there are coconut palms, arecanut palms, mango trees, jack fruit trees, plantains, etc., and sometimes pepper. During the hot months (March-April-May) vegetables

* [1 nali (nari or nazhi) = ¼ of a Madras measure and very nearly = 9 fluid ounces or nearly half a pint.—Ed.]

† I.e., one or two quarts of milk per day. A Madras cow yields up to five quarts per day.

‡ [I.e., it is less valued. Buffalo's milk is very rich.—Ed.]

§ [It is a fact that an Indian cow refuses to give milk without the calf. If the calf dies the dairyman stuffs the skin and makes an imitation calf. This serves the purposes. —Ed.]

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

Labour cost of cultivation of one acre of paddy.

For this area 8½ paras * of seed will be used.

Nature of work.	Rate of wages.	Total number of days.	Total amount of wages.	In kind or money.	Remarks.
			RS. A.		
Ploughing ...	3 as. or 3 ed. of paddy per half-day.	25	4 12	Both customery.	The ploughman works only during the first half of the day. He is expected to plough three times over an area of one para of seed capacity in a half day; and the land requires nine ploughings.
Plucking for replanting.	5 as. or 5 ed. of paddy per day (piece-wages).	8	2 8	Do.	Women chiefly employed. One person plucks one para-seed-area per day and is paid 5 ed. of paddy.
Replanting.	Earns 5 as. or 5 ed. of paddy per day (piece-wages).	4	1 4	Do.	Half the labour of plucking.
Weeding ...	4 as. or 4 ed. of paddy per para.		2 2	Do.	Only when transplantation does not take place.
Water-inspection.	4 as. per day ...	for 3 months.	1 13	Do.	One person can supervise 12½ acres.
Safe-keeping of matured paddy.	4 paras of paddy (Rs. 2) for 15 days.	15 to 20	2 0	Do.	At the period of harvest he is paid in kind.
Harvesting (including mowing, thrashing, etc.).	For every six paras of paddy gathered one para is paid.				Women chiefly engaged.

Note.—The yield per para is 10 to 20 fold †; and in specially favoured lands even more. In this table the price of 1 *edangali* of paddy is taken to be 1 anna (which was the market rate 1916–1917).

Statement showing the prices of staple food-grains in the Cochin State for the year 1915–6.

Articles.	Prices per maund of 82⅔ lb.	
	1914-5.	1915-6.
	RS. A. P.	RS. A. P.
Rice (husked)	6 8 11	6 5 10
Wheat	5 14 1	5 15 11
Peas	5 10 . 6	5 12 1
Dholl	6 8 11	7 5 2
Gram	3 8 0	3 10 7
Gingelly	9 9 7	8 6 1
Green peas	3 5 11	5 7 5
Bengal gram	5 15 2	5 15 9

* [Approximately 180 lb., an excessive quantity. "Transplanted, 20 lb. in 7 cents of land will plant up one acre. But this seed-rate is usually very largely exceeded, up to 150 lb. per acre being used "Wood, Notebook of Agricultural Facts, p. 52.—Ed.]

† [I.e., 16 to 32 cwt. per acre, worth about Rs. 50 to 100. With the lower yield the net return is Rs. 31 per acre, with the higher Rs. 75, from which cost of seed must be subtracted. —Ed.]

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

kanomdars who live in the village also possess lands in the neighbouring villages. In the centre of the village a very sacred and important temple is situated. It has existed for nearly a thousand years, and it is believed by all the people of Malabar that many miracles have from time to time happened there. Many rich devotees have granted lands to it, and it is now the most important landowner of the village, possessing the janmam right over nearly 200 acres of land, all leased to kanomdars. A large part of the temple land is not taxed by the Government, but a low amount fixed by the Government is collected by the temple authorities for its maintenance. This kind of tax is called *Sarvamanyam*. The temple is now managed by the Court of Wards. It belonged to the Zamorin, who handed over his estate to the Court. The Zamorin is the head of a tarwâd* of about 300 members, being the oldest man. Hence when he succeeds he is too old to manage well.

It has been stated that the chief kanomdars excepting three cultivate only the small stips of lands that they occupy and leave it to others to cultivate the rest of their lands. They do not follow any other occupation, but lead an idle life, collecting money from their tenants and lending their money to the poor on security of ornaments and other things. The tendency is for every man who has money to be a money-lender. The sowcars are money-lenders by profession, but every man who has money, instead of depositing it in a bank, lends it to others on high rates of interest. The landowner, the vakil, the official or any other class forms no exception to this rule. Only the traders use the bank.

There are 525 tenants not possessing kanom rights who hold land under kanomdars, and 54 agricultural workers having no land and not renting land. The largest tenant is a Tiyya occupying 80 acres.

Rents are paid both in money and in kind. The chief crop of the village is coconut, but nearly one-fourth of the area is under paddy cultivation. Rents of the coconut areas are paid in money, and those of paddy lands in kind.

Land Revenue.—Rs. 6,411-7-0. This is small because of the exemption of temple lands.

The paddy fields all give two crops per annum. When once a coconut is planted, it lasts for nearly 100 years.

Implements.—There are 542 ploughs in the village, all of the primitive type.

The other implements used are—

(1) the levelling board,

(2) a long stick for powdering the soil,

(3) a short iron instrument somewhat in the shape of a knife for sowing the seed and transplanting,

(4) a rather long handled mamoti, a broad plate of iron sharp at one end and joined to a big stick at another somewhat perpendicularly,

(5) sickles,

(6) big rods used for winnowing the paddy and for separating the grain from the straw,

* [i.e., a Navar family community, having inheritance in the female line. Such an estate is the joint property of all the *female* members of the family and their descendants, the male members of the family also having a right during their lives to support from the family estate, but not transmitting any right to their children.—Ed.]

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

412

(7) pestle and mortar for husking rice,
(8) (for coconut cultivation) a long broad knife with blade and handle each 1 foot long (this serves all purposes),
(9) an implement intermediate between an axe and mamoti, with a thick sharp blade, and a fairly long handle, used for cutting wood, etc.,
(10) a basket, with ropes attached at both sides, worked by two men, to transfer water from a tank or from one field to another,
(11) a form of picotah, worked by a man standing on a platform inside the well, with his hands,
(12) the ordinary bullock lift,
(13) a sharp rod fixed in the earth for removing the outer cover of the coconut,
(14) ropes tied circularly for the purpose of climbing the coconut tree.

231

Stock—

Working oxen	922*
Cows	220
Male buffaloes	503*
Cow ,, ...	221
Young stock	1,103
Horses	7
Donkeys and mules	...
Sheep and goats	1,305
Pigs	20

There are 112 carts.

The cattle are fed on dry paddy straw, coconut fodder, waste powdered rice mixed with water, and grass in the winter season. The feeding of cattle is very carelessly done. They keep their skins and bones only.

237

Manuring.—Cattle dung is used for three purposes :—

(1) For cleaning the whole house. Hindus believe that the sprinkling of cattle dung water purifies the house. Consequently, every day every house is thus cleaned.

(2) For fuel. Chaff mixed with straw and dung is dried and burnt for culinary purposes. All the dung from cows kept by the non-agricultural classes (nearly every family of means keeps a cow for milk) is used in the above ways.

[241]

(3) The dung produced among the agricultural classes is used for manure, not for paddy or coconut, but for the cultivation of vegetables. Very little dung is used for the cultivation of chief crops. The wastage is also large. Perhaps one-fourth of the total dung is used for manuring vegetables. All the rest is used as stated above or wasted. A small portion of the cattle urine is collected in pots and used as manure for vegetables, but nearly all is wasted.

241

Fish and muddy water are used as manure for coconuts, but not to a very great extent, and only by the three rich kanomdars who themselves cultivate. Some also use salt for manure, when they plant coconut. This is very advantageous, and sometimes

* [This shows the very high proportion of one working ox or buffalo for each acre of cultivated land, a proportion accounted for by what is stated about the condition of the animals.—Ed.]

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

241 leads to the tree fruiting within two or three years, instead of four or five. The leaves that fall from the trees in gardens are used as green manure in the paddy fields and coconut gardens. No such thing as growing green manure is known. No wood or forest is near so that the people may bring the leaves.

242 In fact very little manuring takes place in the village. What is actually done in the cultivation of chief crops is to plough the land. Every year much is drawn from the soil, and nothing is returned to it. I have stated above that lands which returned Rs. 1,000 a year do not now return more than Rs. 400 or 500. The two most potent causes for this deterioration are the system of land tenure and the absence of manuring. Perhaps the second is the result of the first, but I think the want of agricultural knowledge is the cause of the want of manuring and scientific cultivation.

372 *Wood and fuel.*—The outer cover of the coconut, the leaves of the same, mango trunks, serve for fuel for the whole village, and they are obtained in plenty, but the price is rising with the general rise of prices.

[313] Wood for implements, building, etc., is obtained from Cochin State, brought in carts drawn by oxen or buffaloes.

342 *The village—Houses.*—For buildings granite is obtained from a place four miles distant, mortar is prepared in the village, mud
361 from the village itself, tiles from different places, the least distant being twenty miles away, for thatch the leaves of the coconut are used, iron things are bought in the bazaar. The houses in the village are all isolated from one another. Every part of the village is inhabited except the paddy fields. However, at the present day traders have a tendency to build their houses as near the road as possible and form streets. The people also have a tendency to live as near the temple as possible, and this has resulted in the formation of four streets, surrounding the temple on all the four sides. These streets form also the bazaar of the village. There are here about 100 houses.

361 The lands adjacent to the temple are occupied by Brahmans and Nayars. Any other place can be occupied by any family. The
571 houses of the low castes, high castes, and of other religions are intermingled. The same garden may be occupied by Muhammadans, Hindus and Christians, and they all live very amicably as if they belonged to one and the same religion.

735 The Pariahs, whose families are only three in number, occupy certain portions of the land of a big landlord. The landlord gives the Pariahs free houses and a certain allowance a month. He thinks it incumbent upon him to protect and maintain them. Their huts, though small, are yet tidy and neat. The allowance that was freely given them has now become a right. They follow certain industries and go to rich men's houses to beg twice a month, and they are given a certain quantity of rice.

342 There are 977 thatched houses, 313 tiled houses, no terraced houses.

286 *Crafts and industries.*—There are seven families of weavers consisting of 39 members, i.e., 14 men, 12 women, 13 children under fifteen years. They have been in the village from times long past. They weave a cloth 1 foot wide, 1¼ yards long, and this is used as undercloth. They also at times weave a cloth ¾ or 1

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

423
651

The desam contains 130 survey fields in all. The settlemen was first introduced in this desam in fasli 1313.

The following table shows the nature and extent of the holding and revenue as given in the 'A' register of the village:—

Holdings and Revenue.

Fasli.	Occupied area.								Deduct waste remitted.		Remainder charge			
	Wet.		Garden.		Dry.		Total.							
	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.	Extent.	Assessment.	Actual cultivation.	Waste charged.	Total extent charged.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
	ACS.	RS. A.	ACS.	RS.	ACS.	RS. A.	ACS.	RS. A.			ACS.		ACS.	R
1313	445·27	2,226 5	209·43	502	197·16	157 14	851·86	2,886 3	...	...	851·86	...	851·86	2,

Fasli—*cont.*	Second crop.		Miscellaneous revenue.	Total ryotwari demand excluding waste remitted.	Deduct remission other than waste already shown in column 11.			Net demand for the year.	Amount collected wi year.	
	Extent.	Charge.			Occasional remission other than for waste.	Other remissions and deductions.	Total.		Arrear.	Current.
	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25
	ACS.	RS. A.	RS. A.	RS. A.		RS. A.	RS. A.	RS. A.		RS.
1313	8·96	13 11	96 5	2,996 3	...	851 12	851 12	2,144 7	...	2,14

312

The ryots mostly depend on the mercy of the monsoon for the watering of fields. But throughout the summer season beginning from the end of December to the end of July, watering is carried on from wells and tanks, especially in the case of garden cultivation. Tanks and wells are not sufficient and those existing are not deep enough and frequently dry up towards March.

241

The chief crops cultivated are coconut, arecanut, paddy, gingelly, pulses, horsegram, plantain and jack.

231

Pasturage is obtainable for the cattle on the unoccupied dry lands. Water for the cattle is obtained from channels, private tanks and wells.

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

427 regulations in the sister states of Cochin* and Travancore, which have placed a decided check on the arbitrary dealings of the landlord over the tenant in those countries. The fear of governmental interference in the near future to regulate the relations of the landlord and the tenant (for it is well known that this problem is an old one in Malabar, and even as far back as 1885, the popular administration of Mr. Logan had made a draft regulation on the same subject which was only abandoned for want of adequate support by the country and which formed the basis on which Cochin and Travancore could afterwards proceed) has stimulated the process of converting kanom lands into verumpattam, i.e., tenure at will. By this the jenmi has a double advantage. The lands are under his direct ownership, and as they are given to cultivation by annual contracts, he can at any time refuse, withhold or do what he likes with his lands. The lands also being as it were put to auction, will produce a higher rate of income than would be the case by giving it on kanom tenure. There is also a recent tendency on the part of the jenmi to raise the kanom amounts because in Cochin and Travancore this is made the basis for the regulation of rent. Till now the policy was to give lands on a nominal kanom, the advantage being in the facility with which they might reclaim the lands at pleasure.

● 241 The Cherumas (the submerged class) are the agricultural
465 labourers who neither own nor rent land. They work for their masters who give them a meagre allowance of 2 edangalis, i.e., 1/5 para (the standard measure) of paddy. With this he supports his wife and family. They are attached to their masters and loath to leave them.

427 Rents are always paid in kind and are high enough particularly in the case of annual holdings. Eighty per cent of the produce will go as rent to the landowner. The sole advantage for which tenants take up lands are, they say, (1) a few days' maintenance after the harvest, (2) the possession of straw, and (3) employment. But sometimes they have to pay rent in money and this is chiefly in seasons of crop failure. This is met in these ways:—(1) Direct borrowing, (2) profit of garden cultivation and (3) the institution of chit-fund,† which is widely prevalent among them.

241 The barber and the washerman of the desam are illustrations
463 of how customary occupations are modified by practical necessity. These people, while they perform their traditional occupations to the society and receive for it the fixed remunerations, have long taken to agriculture as their chief source of income. And they are among the chief farmers. There are two manufacturers of

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* Vide p. 116.

[454]

† [A chit-fund is similar to our Slate-clubs. The members meet periodically, usually every month, and each pays a defined sum into the fund. If it be an 'auction-chit,' the money so collected is given to the member who, not having received it previously, offers to give back the largest amount, e.g., if there be Rs. 100 in the chit, one member may offer to take Rs. 75 only. The remaining Rs. 25 is then divided among the other members. Security is then taken from the recipient of the Rs. 75 that he will continue to pay his monthly contributions till every member has had his turn. In the other variety of chit, the monthly sum is ballotted for. It is the same as Kuri, described on p. 124.—Ed.]

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

241 463 toddy and jaggery and three carters who are mainly agriculturists.

651 The revenue for the year 1915-16 was Rs. 3,175-10-3. The assessment for fasli 1312 for the Amsam of Kothachira was Rs. 6,519-2-4. By settlement (fasli 1326) it is Rs. 11,228-7-0.

241 *Agriculture.*—We have mentioned elsewhere the names of the chief crops. Out of these, the two staple products are paddy and arecanut, the former being a field cultivation and the latter garden. The mainstay of the bulk of the population is arecanut. Every household of any worth is surrounded by an areca palm garden.

The method of cultivation pursued in both these is of an antiquated character.

245 1. *Arecanut.*—Mature fruits are selected for seeds. They are kept in pots and watered for one year. Next year they are planted and within a year and a half or so, they grow into young plants Then they are transplanted into the gardens where they have to be grown. They are planted in parallel lines, the distance from one another varying from two to three yards. The plants are at first placed in pits measuring a cubic yard. Some cow dung and ash manure are put, and a watering is given on alternate days in the summer. During the monsoon they are left to themselves. When the plants grow up into trees, the pit is filled up and a shallow basin round it made just to contain a few gallons of water. These are renewed every year in the beginning of summer, small channels are cut across the gardens to bring water to the root of every tree, water-lifts are erected and regular watering begun. This will continue until the advent of the monsoon.

243 2. *Paddy.*—On the first shower of the monsoon, fields are given a hasty ploughing and seeds are thrown. A fortnight of average showers helps healthy sprouting and the ryot prays for similar weather for another two fortnights to come. By this time, they have grown up into healthy plants. Between the second and third month of their growth, they are carefully unrooted and planted in plots prepared by ploughing for the purpose. Between the fifth and sixth month after sowing comes the harvest. If there is a second crop, the land is again prepared for sowing immediately after harvest and the whole process repeated. For this crop, the ryot depends on the north-east monsoon which gives two months of heavy rain from the middle of November to the middle of January. After this harvest the fields lie fallow for a period of two or three months.

651 134 311 A table given in the next page will show the areas under single and double crop, different soils, and the nature of the assessments on each. (The information is taken from the village accounts.) The assessment given herein is the revised one after the re-settlement.

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

651 On registered double crop land, the charge for the second crop has been consolidated at one-quarter of the single crop assessment. For occasional second crop on land assessed as single crop, the charge will be one-half the single crop assessment.

231 The stock as ascertained by personal enquiry are as shown below. The account of the stock of Kothachira was not obtainable from the village officials, for it is lost. I have tried my best to make the statement complete and exhaustive. But this is a period of extreme fatality to the stock in these parts. Daily one or more are dying. In a single family there died twenty within forty-five days leaving only one or two pairs. The numbers are—

Bullocks	240	
Cows	403	
Buffaloes	287	
Young stock	374	under 4 years.
Goats	712	
[407] Ploughs	414	
Carts	5	
Oil mills	4	

A comparison with the figures for the census of 1899–1900 for the whole amsom of Kothachira (the three desams of Kothachira, Peringode and Mattur) shows an all-round decrease of about forty per cent. I believe the causes of this great reduction to be partly a succession of very bad seasons for stock, and partly selling off under pressure of poverty.

Cattle feeding.—Bullocks and working oxen and buffaloes, besides being left to graze on the unoccupied dry lands and on cultivable areas when they are lying fallow, are given straw and 'kanchi,' water mixed with the dusty part of rice and 'punac' or oil-cake. For cows and young stock only straw is given besides grazing. Goats are simply left to graze. Straw is given to the above working stock after they are housed in their sheds for the evening. The 'kanchi' water is given in the morning just before leading them into fields and in the afternoon after their work is over. They are led to be washed after field work. Bullocks and buffaloes are the working stock.

The breed.—The cattle are very second rate in their breed. The most healthy working oxen grow to a height of from three to three and a half feet and their strength is not half as much as the oxen employed by the firms of Madras. The cow is a pitiable thing ordinarily two to three feet high and milking on an average from a half to one Madras measure per day.* Comparison, it need hardly be said, with Madras cows is odious. They can be milked for only six months. The best come into milking again within a year, but many only within two years.

241 *Manure.*—Almost all the cattle dung is used for manure. One per [237] cent perhaps goes for purposes of washing floors, etc. The cattle urine is allowed in some places to flow into the dung-pit, but no systematic attempt is anywhere made to utilize it to the best advantage. Besides this, burnt ashes and green manure are in common

* [A Madras measure is 62·5 fluid ounces = 3¼ pints. A fair Madras cow in full milk yields about 3¼ Madras measures per day, i.e., 5 quarts.—Ed.]

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

use. No other manure is used. Green manure is not grown but is got from somewhere or other according to circumstances. Varatties are not made. Wood fuel is the only sort used. 241 [372]

Insect pests.—Of these, the most ruinous is the "Chazhi" the terror of the ryot. The chazhi is a small insect of the locust species half an inch long which in millions appear in a few seasons and spread desolation in the paddy fields. Two remedies are current against this pestilence: (1) catching them directly by drawing a cloth (which serves the purpose of a net) attached to two handsticks over the crops and thus killing them; (2) but by far the most efficacious remedy in the estimation of the cultivator is the putting of a talisman in the fields which a local conjurer (Mandravadi) has prepared for him. What chazhi is to paddy "Mahali" is to the arecanut, the only difference being that in this case nothing is believed to be possible to combat the calamity. 242 [789]

Cattle diseases are (1) hoof disease, (2) Koraladappan (swelling in the neck), (3) Thada (mumps), (4) obstruction of urine and dung, (5) sudden epileptic attacks, and other diseases whose causes and cure are unknown to the peasant. Poisoning is sometimes done by Paraiyas of neighbouring desams for the sake of getting the flesh. For beef is eaten only by this lowest class and when cattle die they will be called to remove the carcase. A number of cattle are annually destroyed by tigers also which often venture into the sheds of the peasants. Talismans and offerings to deities are conceived to be the only remedy. 232 [789]

No assistance is obtained from the Agricultural department, nor any from any veterinary doctor.

Wood is commonly got for all uses from private trees; but the forest also supplies sometimes wood for small necessities. For building purposes, wood is purchased—not from any fixed place. 313

Houses.—The depressed castes have miserable hovels for their houses. A mud wall of five feet height with a ruined roof which can protect the inmate neither from sun nor rain is the order of the day. 342

Except the palatial family homes of the two jenmis, there are no tiled houses. Terracing is not customary here. All other houses are thatched, and thatching is always of straw.

Most houses have gardens surrounding them, where arecanut trees, plantains, mango trees, jack, etc., are grown. They are joyful to look at. 351

The maximum distance of cultivated lands from the home of cultivator is one mile.

An acre of land costs from Rs. 200 to Rs. 300. But purchases on jenmi tenure are worth above Rs. 500. But it is impossible to acquire jenmam property except for jenmis; for the jenmis are jealous guardians of their lands and never sell lands once acquired. Direct threatenings and indirect intimidation are used by them to obtain the jenmam right of lands if held by any lesser landowner. 423 [435]

Subsidiary industries.—Neither weaving nor spinning have ever been practised in this desam. 463

Other crafts—

1. Arrack and jaggery making.
2. Ironsmith.

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

311 651 The assessment under IV. Unoccupied dry is the potential amount, i.e., it would be levied if the whole area were cultivated. About one-third or one-half of it may have been at one time or another under cultivation, but the area cultivated in any single year is very small.

[427] Rents are generally paid in kind, though of recent years there is a tendency in some cases (e.g., when the tenant lives at a distance) to commute it for money at current market rates.

The village is assessed for land revenue at a permanent charge of Rs. 3,759-3-0, to which must be added (to obtain the total revenue demanded upon the village, for the year) the charges on the 'unoccupied dry land' actually under cultivation in the year. This last will vary from year to year; the possible maximum is above Rs. 1,000. There is a local cess of 1¼ anna in the rupee of kist levied by the Taluk Board for roads, etc.

• 241 311 *Agriculture—Area under principal crops.*—The area under this head varies from year to year according as more or less of the unoccupied dry land is taken into cultivation. For the year ending March 1916, the following figures are given in the village accounts but they are less exact than they appear, being partly estimates by the village officials.

Paddy—First crop, 847·20 acres; second crop, 460·51 acres.						
Pulses and grains	...	...	...	...	122·47	acres.
Oil-seeds, gingelly	...	...	...	...	155·89	„
„ castor	...	...	...	...	12·59	„
Spices, etc.	...	...	...	...	87·23	„
Fuel and timber trees	...	...	...	...	63·00	„
Betel leaves	...	...	...	...	5·00	„
Vegetables and garden products made up of—						
Vegetables	...	...	...	59·41		
Plantains and bananas	...	...		29·57		
Coconuts	...	...	...	17·00		
Mangoes	...	...	...	23·00		
Arecanuts	...	...	...	9·00		
Jack fruits	...	...	...	8·00		
				——	145·98	

According to the 'A' Register the area of one crop wet land is 271 acres. In some years it appears that this area is smaller, because part of this is *potential* double-crop land, two crops can be raised on it under favourable conditions. But it may safely be said that some 150 acres of wet land yield only one crop. Such portion of the 'unoccupied dry' land which is cultivated in any year also yields but one crop—even that with difficulty, after lying fallow for one, two or more years.

The minimum available area of two-crop land is 409·73 acres. In some years (according to the weather and seasonal conditions) this may increase to some 525 acres. If irrigation could be extended more of the single crop area could be made to yield two crops.

243 Some fifteen to twenty-five acres may yield three crops, under favourable conditions.

All the wet land is utilized for paddy cultivation. Paddy is sown in May soon after the first rains. By the end of September or the beginning of October the first crop is harvested. The seed-

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

237 (called varatties) and used as fuel to supplement firewood, by the poorer classes, who go about picking the stray deposits of cattle-dung in the by-ways and streets. Perhaps a small percentage of cattle-dung is wasted. Yet it is the most important manure and an acre of land uses 100 to 150 baskets of it.

Cattle urine is not used, except by Brahman ladies to a very small extent, in growing kitchen vegetables in their backyards.

The refuse of goat-pens and of fowls (which are kept in most low-class and Nayar houses), as well as bone dust, is used in small quantities for growing garden vegetables.

241 All sorts of green manure are used. About fifty to seventy-five bales of green stuff are used on one acre of land. But green manure is not grown; it is obtained from the neighbouring woods, and the shrubby undergrowth which is commonly found on almost every hillside and in the compounds of houses.

Wood-ash is commonly used, especially in garden cultivation.

Salt is used in coconut plantations.

Chemical manures are unknown in the village.

Garden cultivation is an important item, and very profitable too, though it is not yet carried on very extensively. About 110 acres of land are used for this purpose. Water is obtained mostly from wells, of which there is one or more in every garden. The chief products are coconuts (selling at Rs. 3 to Rs. 5 per 100), arecanuts used for chewing, etc. (Rs. 1½ to Rs. 2 per 1,000), plantains or bananas (Rs. 5 to Rs. 15 per 1,000), jack-fruits (2 to 6 annas each), mangoes, yams and various kitchen vegetables like pumpkins, brinjals, etc. These are cultivated in almost all gardens. Pepper and ginger, betel leaves and turmeric, are also cultivated in all good gardens. Pepper is very valuable and gives a good profit.

[722] Coconuts being largely exported in the form of copra, have fallen 50 per cent in price, through shortage of freight, during the war. This has entailed great hardship on the large classes of coconut growers and workers in the Malabar Coast, this village suffering with the rest.

242 *Insect-pests.*—A kind of beetle sometimes does great damage to the crops—especially the new paddy crops and plantains. Small birds also carry away grains of corn. The usual method of combating them is to keep watch in the fields and drive them off—a very tedious and difficult operation. No help is got from the Agricultural Department, of whose very existence the village is unaware.

232 *Cattle diseases.*—Hoof disease is the commonest and most dangerous. Kerosene oil mixed with lamp black is the popular remedy. There is another disease—a sort of suffocation. A cholera-like disease is also heard of, accompanied by bleeding, etc. Snake-poisoning is another danger, a bite on the nose being supposed to be fatal. The villagers have their traditional methods of combating these. Charms and incantations are used to supplement medicine. No assistance is obtained from the Agricultural Department.

313 *Wood* is obtained from the neighbouring forests, as well as from the clusters of trees in the village. Building timber is often

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

EXPENSES AND PROFITS OF A WORKING TENANT.

435
241

Estimates for 1 acre under paddy.

Fertile two-crop land.—(On two-crop land the tenant pays the kanomdar the whole of the first crop, which is always more than the second crop, and averages about 60 per cent of the total of the two together, kanomdar paying kist.)

Cost of cultivation—

	Paddy. PARAS.	Money. RS. A. P.
Seed for first sowing	5	
Seed for second sowing	7	
Wages for sowing	15	
Manure, 125 baskets of cow-dung with ashes and green manure ...		3 8 0
Reaping and threshing wages (10 per cent)	13	
Allowances to village craftsmen ...	1½	
Allowances to labourers for festivals, child birth, etc.	1½	
Clothes to labourers		0 8 0
Use of oxen		5 0 0
Renewals of agricultural implements		1 2 0
Total ...	43 and	10 2 0

Estimated crop—190 *paras*—

Distribution of crop—

	PARAS.
Kanomdar's share, estimated at 60 per cent	114
Sub-tenant's share (gross)	76
	190

	PARAS.
Cultivation expenses in grain	43
Sub-tenant's grain surplus	33
	76

	RS. A. P.
Money value of 33 paras	22 0 0
Cultivation expenses in money	10 2 0
Sub-tenant's profit and wages of supervision ...	11 14 0

The working tenant also has the straw, and the wages that he may save by his own labour and that of his family.

Moderately good paddy land—

Costs—

	PARAS.	RS. A. P.
Seed for two sowings (7½ paras) ...	15	
Reaping and threshing wages	10	
Other expenses as before	18	and 9 6 0
	43	and 9 6 0

31: Slater S-5 (1916-1917) 1918 AWI India
Kerala AWII

241
435

Product—150 *paras*—	PARAS.	RS.	A.	P.
Kanomdar's share	90			
Tenant's share	60			
,, grain surplus, 17 paras, worth ..		11	6	0
,, money expenses		9	6	0
,, money profit		2	0	0

Good one-crop land—

	PARAS.			
Posts—				
Seed	8			
Wages for sowing	8			
Reaping and threshing wages	6			
Allowances	2			
Money expenses		6	0	0
Total ...	24 and	6	0	0

Product 88 paras, tenant's share being 44 paras.

Grain surplus 20 paras, worth Rs. 14, leaving a money profit of Rs. 8.

Inferior one-crop land.—Here the produce falls to about 72 paras, of which the sub-tenant may get 36 paras. The money profit is Rs. 2.

A small share of the straw is paid to the kanomdar, but the working tenant keeps about nine-tenths. This is not much more than sufficient to feed his oxen.

A small extra rent, in the large Malabar variety of banana, is paid to the kanomdar in the *Onam* festival by each sub-tenant, of an estimated value of eight or nine annas, irrespective of the size of holding.

511 *The annual budget of a typical well-to-do Nayar, a leading kanomdar.*

Income—	PARAS.
The probable income from lands wet and dry together having an extent of 27 and 40 acres, respectively.	4,600 to 5,000

Expenses—	
Food for the family of eight members, two male servants and one female servant	700
Cherumas' wages for the year	950
Seeds	400
Bran, oil-cake and other food for cattle purchased in addition to what is found in the house	75
Janmi's michavaram (rent)	600
Government assessment at two paras for a rupee ...	400
Extra expenses such as salts, oil, etc.	90
Feasts in the temple	60
Charity, such as giving alms and pujari's wages ...	50
The village festivals	10
Sradhas (six in all) (dead relations)	30
Seven kuris	710
Interest on loans (calculated as above) on Rs. 1,500 ...	270